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ABSTRACT

Perceptions of Colorado high technology industry executives and administrators of public two-year postsecondary institutions were surveyed to determine if the educational needs of high technology industries are being met. Their perceptions were also surveyed regarding the role of the Colorado Advanced Technology Institute. Data were obtained from executives and administrators in Colorado and 12 other states. Data analysis revealed that good work habits and special technical skills were rated very important. Broad general education and computer literacy skills received the lowest rating. The greatest need was perceived for technicians, then skilled workers and bachelor's degree graduates. High technology industries' recommendations as to how educational institutions can better serve their needs included the following: provide better quality programs, teach students good work habits, and provide more flexibility in programs. Factors preventing high technology firms from seeking cooperation from institutions included failure of educators to communicate what services they provide to industry, and lack of flexibility or ability to provide short-term or fast track programs. Factors that reduced institutions' ability to serve industry were lack of resources, lack of qualified instructors, and improper facilities. (Twenty-one tables are provided. Appendixes include survey mailing lists and questionnaires.) (YLB)

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RESEARCH REPORT

Perceptions of High Tech Industry Executives and Administrators of Public Two-Year Postsecondary Institutions Regarding the Training Needs of High Tech Industries

by
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Prepared for the
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EXECUTIVE SUMMARY

Objectives

The study was designed to explore the following broad research objectives:

1. To survey the perceptions of Colorado high tech industry executives and administrators of public two-year postsecondary institutions in order to determine if the educational needs of high tech industries are being met

2. To identify the perceptions of executives in Colorado's high tech industries and administrators of public two-year postsecondary institutions as to the role of an advanced technology institute

Procedures

The data utilized in this study were obtained from a mailed survey instrument sent to:

1. Administrators of Colorado's two-year public post-secondary institutions (23 of 23 surveys or 100 percent returned)

2. A random sample of 15 community college administrators in each of the 12 other states identified as having high potential to attract high tech industries (146 of 180 or 81 percent returned)

3. Executives of high tech industries in Colorado as identified by SIC code from tax returns (158 of 359 or 44 percent returned)

Findings

An analysis of the data revealed the following:

1. Traits new employees in high tech firms should possess (Table 2, p. 13):
   a. Good work habits were rated very important by both industry and educators
   b. Special technical skills ranked second in importance
   c. Broad general education and computer literacy skills received the lowest rating of six traits listed. Educators assigned a higher degree of importance to computer literacy skills than did industry executives
2. Need for workers with various levels of training to be employed in high tech industries (Table 3, p. 15):
   a. Greatest need for technicians
   b. Next greatest need was for skilled workers and bachelor's degree graduates
   c. Almost half of the employers expressed no need for advanced degree graduates
3. In-state sources utilized by high tech industries to hire new employees (Table 7, p. 20):
   a. Public vocational-technical schools were mentioned most frequently
   b. Four-year schools were the second most frequently mentioned
   c. Community/junior colleges were ranked third
   d. Universities with graduate programs ranked fourth
   e. Private vocational schools, military, and other sources were utilized to a lesser degree
4. Out-of-state sources utilized by high tech firms to hire new employees (Table 7, p. 20):
   a. Universities and four-year schools received the most responses

b. Out-of-state sources were not utilized to the same degree as in-state sources

5. High tech industries' rating of the preparation of individuals they hire from various sources (Table 8, p. 21):

   a. Graduates of universities with graduate programs were rated as the best prepared

   b. Persons prepared by private vocational schools were rated as being the next best prepared

   c. Over one-half of all the industry executives rated persons they employed as being well prepared or very well prepared

6. Sources high tech industries utilize to train or retrain employees (Table 9, p. 23):

   a. On-the-job training was, by far, the most frequent method utilized

   b. Company-sponsored classes or workshops were the second most popular

   c. Classes or workshops in public institutions ranked third

7. High tech industries' recommendations as to how Colorado's institutions can better serve their needs (Table 10, p. 24):

   a. "Improve the quality of programs" was mentioned most frequently

   b. "Provide more flexibility in offering programs" and "teach students good work habits" were listed the next most frequently

8. Items which prevent high tech firms from seeking assistance from institutions (Table 11, p. 26 and Table 12, p. 27):

   a. "Educators have not communicated what services they provide to industry" was listed as a severe problem by almost one-third of the industry executives. Almost two-thirds of the executives indicated it was either somewhat of a problem or a severe problem

   b. "Lack of flexibility or ability to provide short term or fast track programs" was listed as the next most prevalent problem

c. Other problems listed by at least one-half of the industry executives were "obsolete equipment and facilities" and "lack of qualified instructors"

9. Development of cooperative arrangements with high tech firms (Table 13, p. 28):

   a. Over 65 percent of the Colorado institutions and 63 percent of the out-of-state institutions have developed cooperative arrangements with high tech firms

   b. Utilization of high tech personnel on advisory committees, use of high tech personnel as lecturers or instructors, development of specific courses or programs, and use of equipment donated by high tech firms were most commonly mentioned areas of cooperation

10. Factors which reduce educational institutions' ability to serve high tech industry (Table 14, p. 30):

    a. "Lack of resources to start new programs or purchase new equipment" was listed as being the most severe problem

    b. "Unable to hire qualified instructors" and "improper facilities" were listed as problems by a majority of the institutions

11. Programs which completers are employed in high tech firms (Table 15, p. 31):

    a. "Electronics" was most frequently listed by both Colorado institutions and out-of-state institutions

    b. "Computer programming/data processing" and "CAD/CAM" programs were the next more frequently listed programs both in Colorado and in out-of-state institutions

12. Administrators of Colorado's two-year public institutions' familiarity with CATI (Table 16, p. 32):

-- Very familiar	14 percent
-- Somewhat familiar	73 percent
-- Not familiar	14 percent

13. Administrators of Colorado's two-year public institutions' rating of benefits of CATI to their institution (Table 17, p. 33):

-- Great benefit	5 percent
-- Some benefit	45 percent
-- No benefit	35 percent
-- No opinion	15 percent

14. Administrators of Colorado's two-year public institutions' responses to question, "Do you support the designation of certain institutions as centers of excellence in specific high tech program areas?" (Table 12, p. 27)

-- Yes	59 percent
-- No	14 percent
-- No opinion	27 percent

15. Colorado's high tech industry executives' familiarity with CATI (Table 15, p. 32):

-- Very familiar	6 percent
-- Somewhat familiar	22 percent
-- Not familiar	72 percent

16. Colorado's high tech industry executives' perceptions of the benefit of CATI (Table 17, p. 33):

-- Great benefit	8 percent
-- Some benefit	67 percent
-- No benefit	21 percent
-- No opinion	4 percent

17. Colorado's high tech industry executives' responses to the question, "Should certain two-year or four-year institutions be designated to specialize in specific high tech fields?" (Table 21, p. 39)

-- Yes	48 percent
-- No	17 percent
-- No opinion	34 percent

18. Roles that should be a high priority for CATI as identified by high tech industry executives (Table 18, p. 35):

    a. "Identify new educational programs needed" received the most responses

    b. "Help evaluate present educational programs in high tech areas" was second in the number of responses

c. "Promote technical level high tech programs" was third in the number of responses

d. "Promote advanced degree level high tech programs" received the fewest responses of the 12 items listed

19. Roles that should be a high priority for CATI as identified by administrators in Colorado's two-year public supported institutions (Table 19, p. 36):

a. "Help institutions secure additional money and equipment" was listed most frequently

b. "Identify new programs needed and promote technical level high tech programs" was identified by a large majority of institutions

c. "Help avoid duplication of programs, promote inservice training of employees, and promote research in high tech areas" was listed by more than one-half of the institutions

20. High tech industry executives' recommendations as to who should be represented on the governing commission of CATI (Table 20, p. 38):

a. Forty-three percent favored high tech industries, public research-oriented universities, public two-year postsecondary institutions preparing technicians

b. Thirty-nine percent favored high tech industries and all postsecondary institutions

c. Thirteen percent favored high tech industries and public research-oriented universities

d. Six percent favored other combinations

21. There were no significant differences in the responses of the Colorado administrators of two-year postsecondary institutions and the administrators of community colleges in the 12 selected states

22. Significant differences were observed in the responses of industry executives of small high tech firms (less than 50 employees) and the responses of executives in large (over 50 employees) high tech firms

23. A significant difference in the responses of executives of small high tech firms and the responses of executives of large high tech firms was found in the areas of:

    a. Traits desired in entry-level workers

    b. Levels of education and training needed by workers in high tech firms

    c. Sources utilized for training or retraining employees

    d. Factors which prevent high tech firms from seeking assistance from educational institutions

    e. The familiarity with CATI and the benefit and role it should play

24. A significant difference was observed in the responses of the educational institution administrators and high tech industry executives in regard to the traits desired for entry-level workers

Recommendations

Based on the findings of this study, the following recommendations are made:

1. A concerted effort should be made to inform high tech industries of the services and programs available at public educational institutions. Particular attention should be focused on marketing these programs and services to the smaller high tech firms

2. Educational institutions should provide more flexibility in their program offerings. Methods should be identified that will enable institutions to provide more industry specific, fast track customized program offerings

3. Educators should emphasize the importance of persons possessing good work habits, special technical skills, and writing and communication skills in those programs which place completers in high tech firms

4. Since the greatest need of high tech industries when hiring new employees is for persons with technician level training, efforts should be made to improve and expand those technical level programs at the postsecondary level that place completers in high tech firms

5. When educators utilize persons from high tech firms to help design, develop, and operate educational programs, representatives from various sizes of firms should be involved. This is of particular importance in Colorado due to the number of smaller firms and the recognition that the needs of smaller firms differ from those of the larger well known firms

6. Efforts should be made to improve the quality of those educational programs that place completers in high tech firms

7. Educational institutions should place more emphasis on working with high tech firms to help them provide retraining for their employees

8. A concerted effort should be made to inform executives of high tech firms of the establishment of CATI and the possible benefits CATI will provide to high tech industries in Colorado

9. The governing commission of CATI should be expanded to include representatives of institutions who prepare technicians

10. The role of CATI should be redefined to place more emphasis on:

    a. The identification of new high tech educational programs needed

    b. The evaluation of existing high tech educational programs and the identification of unnecessary duplication in program offerings

    c. The promotion of technical level programs

    d. The promotion of research in high tech areas and assisting institutions in securing needed facilities and equipment

11. Specific institutions should be designated as centers of excellence in certain high tech areas

PROCEDURES

Population and Sampling

The populations used in this study consisted of 23 Colorado postsecondary administrators from the 23 public two-year institutions in Colorado (Appendix A); 180 postsecondary administrators from 12 states designated as having a high potential to attract high tech industries (Appendix B); and 359 Colorado high tech industry executives (Appendix C). The total number of public two-year postsecondary administrators surveyed was 203.

The 23 Colorado postsecondary institutions represented all the public two-year postsecondary institutions in Colorado as identified by the SBCCOE office in Denver. From the 12 states designated as having a high potential to attract high tech industries, a random sample of 15 public two-year institutions from each state was selected for inclusion in the study. The 1983 edition of Community, Technical, and Junior College Directory was used to obtain a listing of out-of-state schools to be included in the sample. For those states having only 15 public two-year institutions, the entire representation from the state was included. For those states with more than 15 institutions, samples were selected at random by using numbers from Random Numbers and Uniform and Normal Distribution with Indices and Subsets. A list of 722 high tech firms classified by Standard Industrial Classification (SIC) was obtained from the Colorado Department of Taxation, and additional names were provided by Colorado Chambers of Commerce. However, upon closer examination, numberous duplications existed, since some firms were classified by more than one SIC code. After these duplications were removed, a list of 359 high tech firms remained for inclusion in the study. The characteristics utilized to identify the high tech firms and a list of the SIC codes with their short titles is found in Appendix D.

Instruments

An advisory committee consisting of representatives from industry, education, and government (see Appendix E) was used to identify the topic areas to be included in the development

of the survey instrument. At the committee's suggestion, three survey instruments were developed--one to be sent to the chief executive officer of public two-year postsecondary institutions in Colorado (Appendix F), one to be sent to out-of-state postsecondary administrators (Appendix G), and another instrument to be sent to the chief administrative officer of high tech firms (Appendix H). Assistance in developing the questionnaire was also obtained from the Statistics Lab located on the Colorado State University campus. The questionnaires were pre-tested for readability and clarity by administering the instruments to a class of vocational education graduate students at Colorado State University and to a class of master of business administration students in the Department of Marketing at Colorado State University. The MBA students used to pre-test the instruments were individuals currently working in high tech industries in Fort Collins, Colorado. Also, the questionnaires were designed in such a manner as to be concise yet specific enough to gather the necessary information to achieve the objectives stated in this study. The questionnaire was designed so that the respondent could complete it in approximately five minutes.

Gathering the Data

A cover letter (Appendices I, J, and K) and a questionnaire were sent by first class mail to all individuals included in the study by March 10, 1984. The letter explained the purpose of the study and sought their cooperation in completing and returning the questionnaire. A return date of April 16, 1984 was used. A follow up by telephone call was made to all nonrespondents prior to May 5, 1984, encouraging them to return the survey instrument. Another questionnaire was sent to those subjects who had either misplaced or lost the first instrument mailed to them. A final cut-off date of May 5, 1984 was established and only those instruments received prior to that date were utilized in the analysis.

The questionnaire forms for each of three respondent categories were color coded for easy identification in the following way: green (Colorado public two-year postsecondary administrators), blue (out-of-state administrators), and yellow (high tech industry executives).

To maintain confidentiality, the questionnaires were number coded. After the research activities were completed, the code was destroyed. As can be seen from the information in Table 1, the response rate was 100 percent for Colorado administrators, 85 percent for out-of-state administrators,

and 44 percent for high tech industry executives. Seven returns from out-of-state administrators were not used, since these respondents failed to adequately complete the questionnaire.

TABLE 1. Summary of Questionnaires Returned.

Group	Number Mailed	Number Returned	Percent Returned
I - Colorado Postsecondary Administrators	23	23	100.0
II - Out-of-State Postsecondary Administrators	180	153*	85.0
III - High Tech Industry Executives	359	158	44.0

*Includes seven unusable returns.

Analysis of the Data

After the questionnaires were received, they were recorded and taken to Elliott Data Processing, a private firm, for keypunching on data processing cards and for verification. The analysis of the data was accomplished by using the Colorado State University computer under the assistance of Dr. Phil Chapman, Associate Director of the University Statistical Analysis Unit.

Analysis of the data was accomplished by using the Statistical Package for the Social Sciences (SPSS) programs for chi square analysis, means, cross-tabulations, and multiple-response analysis. A confidence level of .05 was used to determine if there was actual agreement between the groups of respondents. The descriptive adjectives used in the questionnaires (0 - no problem, 1 - minor problem, 2 - somewhat of a problem, and 3 - severe problem) were assumed to be ordered categories.

For comparison purposes, the high tech industry responses were divided between small and large businesses. A small business was considered a firm with 50 or less employees, and a large business was considered a firm employing over 50 employees.

FINDINGS

The findings of this study are presented in the tables which follow.

Traits Needed by Entry-Level Employees

All groups were asked to rate the importance of various traits new employees at the entry level should possess or the traits students should possess when leaving a postsecondary technical training program. The information contained in Table 2 indicates the responses by mean scores assigned to each trait by the industry executives, Colorado postsecondary administrators, and out-of-state postsecondary administrators. The scale used to compute the mean scores was: 0 - not important, 1 - of some importance, 2 - important, and 3 - very important. Based on mean scores, high tech industry executives ranked "good work habits" as the most important trait followed by "special technical skills," "writing and communication skills," "math and science knowledge," "broad, general education," and "computer literacy skills."

Colorado public two-year postsecondary administrators' ranking was very similar to the industry executives in that "good work habits" were viewed as the most important trait followed by "special technical skills," "math and science knowledge," "writing and communication skills," "computer literacy skills," and "a broad, general education."

Out-of-state postsecondary administrators ranked "good work habits" as the most important trait followed by "special technical skills," "writing and communication skills," "math and science knowledge," "computer literacy skills," and "a broad, general education."

Generally, there was very little difference in the ranking of the six traits among the groups. Each group selected "good work habits" and "special technical skills" as the two most important traits new employees should possess. "A broad, general education" and "computer literacy skills" received the lowest rating of the six traits by all groups.

In comparing the Colorado administrator with the out-of-state administrator, there was no significant difference in their mean scores for the traits listed, as can be seen in

TABLE 2. High Tech Industry Executives' and Two-Year Postsecondary Administrators' Perceptions Regarding the Traits Needed by Entry-Level Employees.*

Trait	Mean			Significance of In-State/ Out-of-State X^2 Value	Significance of All Administrators With Industry X^2 Value
	Industry Executives	In-State Administrators	Out-of-State Administrators		
Good Work Habits	2.83	2.86	2.72	.3730	.0218**
Special Technical Skills	2.21	2.82	2.66	.4814	.0001**
Writing/Communication Skills	1.94	2.47	2.61	.3774	.0001**
Math/Science Knowledge	1.79	2.69	2.53	.4084	.0001**
Broad General Education	1.68	1.86	1.87	.5164	.0001**
Computer Literacy Skills	1.26	2.26	2.28	.7184	.0001**

*Based on values: 0 - not important; 1 - of some importance; 2 - important; and 3 - very important.
**Significant at the .05 level.

Table 2 by the high chi square values. However, there was a significant difference in the perception of administrators and industry executives as to the importance of each trait when their responses were compared using chi square analysis as illustrated in Table 3. The six traits received a much higher rating of importance from the administrators than they received from the industry executives.

Table 4 illustrates the comparison between the small firms (those having less than 50 employees) and the larger firms (those having over 50 employees) with regard to the traits needed by entry level technical employees. As can be seen, there was a significant difference between small firms and large firms regarding the importance of the six traits listed. The only trait for which there was no significant difference between small and large firms was "good work habits." It is also interesting to note that large high tech industries place more importance, than do their smaller counterparts, on "special technical skills," "writing and communication skills," "math and science knowledge," "broad, general education," and "computer literacy skills."

Level of Training Needed by Persons Employed in High Tech Industries

The information in Table 5 illustrates industry executives' perceptions of the levels of education and training needed by employees in high tech firms. Based on values of 0 - no need, 1 - little need, 2 - moderate need, and 3 - great need, the mean scores indicated the greatest need was for "technicians" followed by "skilled workers," "bachelor's degrees," "advanced degrees," and "individuals with no formal training." Over one half of the executives expressed either no need or little need for "employees having advanced degrees" or having "no formal training." Therefore, industry executives appeared to be expressing the greatest need for employees with "technical level education," "skilled workers," and "individuals with bachelor's degrees."

A comparison of the educational level of employees needed by small and large high tech firms is shown in Table 6. The ranking of educational level needed was very similar with the only exception being that small high tech firms assigned a higher degree of need to "no formal training" than they did to "advanced degree graduates." Large firms consistently had higher mean scores for each category. According to the chi square analysis, there was a significant difference in the perceptions of executives of large and small firms in relation to the need for "technicians," "bachelor's degree graduates," and "advanced degree graduates." Larger firms indicated a greater need for employees having these levels of

TABLE 3. Comparison of High Tech Industry and Two-Year Postsecondary Administrators Regarding the Traits Needed by Entry-Level Technicians.*

Trait@	Mean		Significance of All Industry/All Administrators X^2 Value
	Total Industry	All Administrators	
Good Work Habits	2.83	2.74	.0218**
Special Technical Skills	2.21	2.63	.0001**
Writing/Communication Skills	1.94	2.59	.0001**
Math/Science Knowledge	1.79	2.56	.0001**
Broad General Education	1.68	1.88	.0001**
Computer Literacy Skills	1.26	2.28	.0001**

*Based on values: 0 - not important; 1 - of some importance; 2 - important; and 3 - very important.
@Ranked by frequency of responses.
**Significant at the .05 level.

TABLE 4. Comparison of Small and Large High Tech Firms Regarding the Traits Needed by Entry-Level Technicians.*

Trait@	Mean			Significance of Small/Large Business X^2 Value
	Total Industry	Small Business	Large Business	
Good Work Habits	2.83	2.81	2.85	.1321
Special Technical Skills	2.21	1.98	2.61	.0004**
Writing/Communication Skills	1.94	1.87	2.08	.0185**
Math/Science Knowledge	1.79	1.58	2.14	.0097**
Broad General Education	1.68	1.74	1.58	.0095**
Computer Literacy Skills	1.26	1.07	1.60	.0002**

*Based on values: 0 - not important; 1 - of some importance; 2 - important; and 3 - very important.
@Ranked by frequency of responses.
**Significant at the .05 level.

TABLE 5. High Tech Industry Executives' Perceptions of the Levels of Education and Training Needed by Employees in High Tech Firms.*

Education Level	Mean	Percent			
		No Need	Little Need	Moderate Need	Great Need
Technicians - Training Beyond High School	1.99	9.2	15.5	42.3	33.0
Skilled Workers	1.87	9.0	16.6	53.1	21.3
Bachelor's Degree	1.62	21.2	21.2	32.1	25.5
Advanced Degree Graduates	1.09	43.3	18.1	25.3	13.4
No Formal Training	.97	37.9	30.7	27.9	3.5

*Based on values: 0 - no need; 1 - little need; 2 - moderate need; and 3 - great need.

TABLE 6. Comparison of Small High Tech Business and Large High Tech Business Regarding the Levels of Education and Training Needed by Employees in High Tech Firms.*

Education Level	Mean		Significance of Small/Large Business X^2 Value
	Small Business	Large Business	
Technicians - Training Beyond High School	1.78	2.38	.0025**
Skilled Workers	1.76	2.06	.1466
Bachelor's Degree	1.22	2.29	.0001**
Advanced Degree Graduates	.77	1.62	.0001**
No Formal Training	.85	1.18	.1442

*Based on values: 0 - no need; 1 - little need; 2 - moderate need; and 3 - great need.
**Significant at the .05 level.

education than did the smaller firms. These data seemed consistent in that larger firms would probably have the resources to hire the more qualified individuals and the smaller firms would not.

Sources High Tech Industries Utilized in Hiring New Employees and the Appropriateness of Training Given by These Sources

Industry executives were asked to identify sources both in-state and out-of-state that they utilized in hiring new entry-level employees. The data in Table 7 illustrates the sources high tech firms utilized in hiring new employees. From in-state sources, "public vocational-technical schools," were ranked first as the source most often used, followed by "four-year schools," "community and junior colleges," "universities," "private vocational schools," and "the military." Of the in-state sources, "universities," "private vocational schools," and "the military" were used to a lesser degree by high tech firms as sources for hiring employees.

"Universities" and "four-year schools" received the most responses in relation to out-of-state sources used by high tech firms to hire new employees. This was followed by "public vocational-technical schools," "military," "community and junior colleges," and "private vocational schools." However, it should be noted that out-of-state sources were not utilized to the same degree as in-state sources. This fact indicated that for entry-level employees, high tech firms in Colorado hired primarily from within the state.

High tech industries' rating of the appropriateness of training received by entry-level employees hired from the various sources used presented some interesting contrasts. While industry executives ranked "public vocational-technical schools" as their number one source for hiring new employees as shown in Table 7, they ranked this source lower than most other sources as to the effectiveness or appropriateness of training received. "Graduates of universities with graduate programs" were rated as the best prepared, followed by "individuals trained in private vocational schools" and "the military." "Community colleges," "other sources," and "public vocational-technical schools" were ranked toward the bottom.

In comparing small firms with large firms with regard to appropriateness of training in Table 8, small firms listed "universities" as doing the best job of training employees, followed by "the military," "private vocational schools," "four-year colleges," "public vocational-technical schools," "community and junior colleges," and "other sources." Large firms ranked "universities" as the best, followed by

TABLE 7. Sources Colorado High Tech Firms Utilize in Hiring New Entry-Level Employees.*

In-State Sources	Number of Responses	Out-of-State Sources	Number of Responses
1 - Public Vocational-Technical Schools	88	1 - Four-Year Schools	35
2 - Four-Year Schools	61	2 - Universities	34
3 - Community and Junior Colleges	57	3 - Public Vocational-Technical Schools	21
4 - Universities	54	4 - Military	18
5 - Private Vocational Schools	33	5 - Community and Junior Colleges	17
6 - Military	20	6 - Private Vocational Schools	13

N = 158

*Ranked by total number of responses.

TABLE 8. High Tech Industry Executives' Rating of the Appropriateness of Training Received by Entry-Level Employees Hired From Various Sources.*

Source@	Mean			Significance of Small/Large High Tech Business X^2 Value
	Total High Tech Business	Small High Tech Business	Large High Tech Business	
Universities	2.12	1.88	2.20	.0990
Private Vocational Schools	1.83	1.59	2.11	.1134
Military	1.81	1.83	1.79	.6185
Four-Year Schools	1.79	1.59	1.96	.0045**
Community and Junior Colleges	1.56	1.38	1.71	.2557
Other	1.42	1.33	1.67	.3618
Public Vocational Technical Schools	1.31	1.47	1.65	.4484

*Based on values: 0 - not prepared at all; 1 - somewhat prepared; 2 - well prepared; and 3 - very well prepared.
@Ranked by frequency of responses.
**Significant at the .05 level.

"private vocational schools," "four-year colleges," "military," "community and junior colleges," "other sources," and "public vocational-technical schools." Both small and large industries ranked public vocational-technical schools either near or at the bottom of appropriateness of training.

There were few significant differences between small firms and large firms regarding the rating of the appropriateness of training from the various sources. The only apparent difference was on the rating of "four-year schools" in which large firms indicated a higher level of preparation on this source than did the small high tech firms. This difference may be accounted for by the fact that smaller firms did not hire as many college graduates and did not rate them as being as important.

Sources High Tech Firms Utilized for Training/Retraining Employees

As can be seen from the data contained in Table 9, the two major sources used by high tech firms to train or retrain employees were "company sponsored on-the-job training" and "company sponsored workshops or classes." "Classes and workshops in public institutions" ranked third, followed by "classes and workshops in private institutions," "private consulting by individuals in firms," and "classes and workshops provided by government." The high percentage of total nonresponse to this item by industry may indicate that high tech industries were not taking advantage of training or retraining programs offered by Colorado public two-year postsecondary institutions.

In comparing small firms with large firms as to the sources they utilized in training and retraining employees, small firms ranked the sources in the same order as did the large firms. However, based on the significance of the chi square values, there were significant differences between small and large firms in utilizing "company sponsored on-the-job training," "company sponsored workshops or classes," "classes and workshops in public institutions," and "classes and workshops in private institutions." There was no significant difference between the two groups in utilizing private consulting sources or governmental agencies which ranked at the bottom for each size industry. Large firms did utilize all sources to a higher degree than did the small firms.

TABLE 9. Sources High Tech Firms Utilize in Training or Retraining Employees.

Source*	Percent						Significance of Small/Large Business X^2 Value
	Total Industry		Small Business		Large Business		
	Response	Non-Response	Response	Non-Response	Response	Non-Response	
Company Sponsored On-the-Job Training	83.2	16.8	77.2	22.8	94.4	5.6	.0063**
Company Sponsored Workshops or Classes	51.3	48.7	35.3	64.7	81.5	18.5	.0001**
Classes/Workshops in Public Institutions	42.3	57.7	27.5	72.5	70.4	29.6	.0001**
Classes/Workshops in Private Institutions	30.8	69.2	17.6	82.4	55.6	44.4	.0001**
Private Consulting by Individuals or Firms	28.8	71.2	16.7	83.3	51.9	48.1	.1200
Classes/Workshops Provided by Government Agencies	10.3	89.7	7.8	92.2	14.8	85.2	.1721

*Ranked by frequency of responses.
**Significant at the .05 level.

Industry Executives' Perceptions of How Educational Institutions Can Better Serve Their Needs

The information contained in Table 10 lists the most frequently mentioned actions that Colorado educational institutions should take to better serve high tech industry needs. "Provide or improve the quality of programs" was the number one response indicated by industry. "Provide more flexibility in offering programs" and "teach students good work habits" were the next most frequently mentioned items. "Improve communication with industry" ranked fourth, followed by "concentrate on math skills," "hire better trained faculty," and "teach students good communication skills." The information here would indicate that high tech industry executives appeared to be very concerned with the quality of programs being offered for training technician level employees. This factor was of considerable importance to Colorado educational institutions, since the data in Table 8 indicated that industry executives rated public vocational-technical schools below the other types of institutions in regard to appropriateness of training.

TABLE 10. Perceptions of High Tech Industry Executives Regarding the Actions Educational Institutions Should Take to Better Serve High Tech Industry Needs.

Action*	Percent Responding
Provide Better Quality Programs	29.6
Teach Students Good Work Habits	18.9
Provide Flexible Hours and Programs	18.9
Improve Communications With Industry	12.2
Concentrate on Math/Science Skills	9.5
Hire Better Trained Faculty	6.8
Teach Students Good Communication Skills	4.9

*Ranked by frequency of responses.

Factors Preventing High Tech Firms From Seeking Cooperation/Support From Colorado Postsecondary Educational Institutions

The items listed in both Table 11 and Table 12 identified those factors which prevented high tech industries from seeking assistance from educational institutions. In Table 11 the nine factors are listed by the order of mean scores. The scale used to measure the responses was: 0 - no problem, 1 - minor problem, 2 - somewhat of a problem, and 3 - severe problem.

As can be seen from Table 11 and Table 12, high tech industry executives indicated that the "institutions have not communicated what is available at their institutions" as their most severe problem preventing them from seeking assistance at educational institutions. Almost two-thirds of the executives indicated it was either somewhat of a problem or a severe problem. The remaining major factors that were considered as severe problems in order of response were: "lack of flexibility in providing short-term or fast-track programs," "lack of qualified or experienced instructors," and "institutions have obsolete equipment and facilities."

The data in Table 12 clearly revealed that, with regard to items that prevented high tech firms from seeking assistance from educational institutions, there was little significant difference between small firms and large firms. The only item in which the chi square value was significant was for the factor, "institutions have not communicated what is available." On this factor, the small firms' mean score was much higher than the large firms.

Cooperative Arrangements That Public Two-Year Postsecondary Institutions Have Developed With High Tech Firms

Over 60 percent of all educational institutions have developed some type of cooperative arrangements with high tech industry. The information in Table 13 indicated that over 50 percent of the institutions made large use of "high tech personnel on advisory committees," used "high tech personnel as guest lecturers," used "equipment donated by high tech firms," "developed courses and programs for specific industries," and "used high tech firms for internships and cooperative experiences."

There was no significant difference between the cooperative arrangements made by Colorado postsecondary administrators and those made by the out-of-state administrators. The data

TABLE 11. Items Which Prevent High Tech Industries From Seeking Assistance From Educational Institutions.

Item[a]	Percent											
	No Problem			Minor Problem			Somewhat of a Problem			Severe Problem		
	All Industry	Small Business	Large Business	All Industry	Small Business	Large Business	All Industry	Small Business	Large Business	All Industry	Small Business	Large Business
Institutions have not communicated what is available	21.7	14.5	31.8	17.0	16.1	18.2	31.1	27.4	36.4	30.2	41.9	13.6
Lack of flexibility in providing short-term/ fast-track programs	23.2	30.2	14.3	14.7	11.3	19.0	41.1	43.4	38.1	21.1	15.1	28.6
Lack of qualified/ experienced instructors	22.1	28.6	12.8	23.2	17.9	30.8	30.5	33.9	25.6	24.2	19.6	30.8
Institutions have obsolete equipment and facilities	24.7	33.9	12.2	20.6	19.6	22.0	30.9	23.2	41.5	23.7	23.2	24.4
Too costly to use educational facilities	29.7	28.8	31.0	21.8	18.6	26.2	31.7	32.2	31.0	16.8	20.3	11.9
Do not know what institutions offer	30.6	23.8	40.0	24.1	22.2	26.7	29.6	31.7	26.7	15.7	22.2	6.7
Institutions resist offering new programs	32.3	37.7	25.6	20.8	18.9	23.3	33.3	28.3	39.5	13.5	15.1	11.6
Unfamiliar with procedures to gain assistance	38.0	27.0	53.3	15.7	15.9	15.6	27.8	30.2	24.4	18.5	27.0	6.7
Lack of accessibility in my area	57.6	48.3	70.7	18.2	22.4	12.2	14.1	15.5	12.2	10.1	13.8	4.9

[a]Ranked by mean scores.

TABLE 12. Items Which Prevent High Tech Industries From Seeking Assistance From Educational Institutions.*

Item@	Mean			Significance of Small/Large High Tech Business X^2 Value
	Total High Tech Business	Small High Tech Business	Large High Tech Business	
Institutions have not communicated what is available	1.70	1.97	1.32	.0112**
Lack of flexibility in providing short-term/fast-track programs	1.60	1.43	1.81	.1277
Lack of qualified/experienced instructors	1.57	1.45	1.74	.1152
Institutions have obsolete equipment and facilities	1.54	1.36	1.78	.0675
Too costly to use educational facilities	1.36	1.44	1.24	.6307
Do not know what institutions offer	1.31	1.52	1.00	.0810
Institutions resist offering new programs	1.28	1.21	1.37	.4909
Unfamiliar with procedures to gain assistance	1.27	1.57	.84	.0119**
Lack of accessibility in my area	.77	.95	.51	.1351

*Based on values: 0 - no problem; 1 - minor problem; 2 - somewhat of a problem; and 3 - severe problem.
@Ranked by frequency of responses.
**Significant at the .05 level.

TABLE 13. Cooperative Arrangements Postsecondary Institutions Have Developed With High Tech Industry.

Type of Arrangement*	Percent				Significance of In-State/Out-of-State Postsecondary Institutions
	In-State Administrators		Out-of-State Administrators		
	Yes	No	Yes	No	X^2 Value@
Used high tech personnel on advisory committee	60.9	39.1	64.7	35.3	.7193
Used high tech personnel as guest lecturers	60.9	39.1	52.5	47.5	.4568
Used equipment donated by high tech firms	52.2	47.8	55.4	44.6	.7736
Developed courses/programs for specific industries	52.2	47.8	52.5	47.5	.9756
Used high tech firms for internships/ cooperative experiences	52.2	47.8	46.0	54.0	.5852
Used high tech personnel as instructors	47.8	52.2	52.5	47.5	.6766
Developed customized programs for individual firms	47.8	52.2	43.2	56.8	.6765
Used equipment on loan from high tech industries	26.1	73.9	25.9	74.1	.9848

*Ranked by frequency of responses.
@No significant values at the .05 level.

indicated that Colorado institutions were very similar to out-of-state institutions with regard to developing cooperative arrangements with high tech industries.

Factors Which Reduced Public Two-Year Postsecondary Institutions' Ability to Serve High Tech Industries

A review of the data showed that over 50 percent of the Colorado administrators and over 80 percent of the out-of-state administrators indicated that their abilities to serve industry were greatly reduced due to the "lack of resources to secure needed equipment and to start new programs." These same factors were identified by industry as shown in Table 11 and Table 12 as a reason why industry did not seek assistance from educational institutions. The factors which reduced postsecondary institutions' abilities to serve high tech industries are illustrated in Table 14 by mean scores. Educators indicated the five most prevalent factors as "lack of resources to secure needed equipment," "lack of resources to start new courses or programs," "unable to hire qualified instructors," "lack of proper facilities," and "industry does not know what they need or want." The other four factors identified in Table 14 were of lesser importance.

There existed almost total agreement among both Colorado administrators and out-of-state administrators on those factors which reduced their abilities to serve high tech firms. The only factor with a significant difference was "lack resources to start new programs" which was given a greater level of importance by the Colorado administrators than their out-of-state counterparts.

Postsecondary Programs Having a Significant Number of Completers Employed in High Tech Industries

Educators from Colorado and from the 12 other selected states were asked to list those programs in which a significant number of completers from their programs were employed in technician level positions with high tech firms. The data in Table 15 indicated that in both cases "electronic and communication" programs were first, "computers and data processing" second, "CAD/CAM" third, "robotics and instrumentation" fourth, and "agri-chemical" fifth. The information also indicated that Colorado institutions were consistent with out-of-state institutions in offering the same programs that served high technology industry needs.

TABLE 14. Factors Which Reduced Postsecondary Institutions' Ability to Serve High Tech Industries.*

Factors@	Mean			Significance of In-State/Out-of-State Administrators X^2 Value
	All Administrators	In-State Administrators	Out-of-State Administrators	
Lack resources to secure needed equipment	2.48	2.78	2.43	.1173
Lack resources to start new courses/programs	2.42	2.74	2.37	.0442**
Unable to hire qualified instructors	1.82	2.00	1.79	.1728
Lack of proper facilities	1.77	1.70	1.78	.7913
Industry does not know what they want/need	1.11	1.05	1.12	.2047
Difficulty in getting faculty to modify courses/curriculum	.87	.61	.91	.0733
Faculty are not willing to maintain competencies or retrain	.83	.65	.87	.5472
Lack of student interest in high tech programs	.65	.57	.67	.7515
High tech industries not hiring our students	.63	.74	.61	.4850

*Based on values: 0 - no problem; 1 - minor problem; 2 - somewhat of a problem; and 3 - severe problem.
@Ranked by frequency of responses.
**Significant at the .05 level.

TABLE 15. Programs in Which a Significant Number of Students Have Been Placed in Technician Level Positions With High Tech Firms.

Programs*	In-State N = 23		Out-of-State N = 146	
	Number	Percent	Number	Percent
Electronics and Communications	17	73.9	95	65.0
Computers and Data Processing	7	30.4	63	43.2
CAD/CAM	3	13.0	33	22.6
Robotics/Instrumentation/Optics	3	13.0	16	11.0
Agri-Chemical	2	8.7	6	4.1

*Ranked by frequency of responses.

Familiarity With CATI

The public two-year postsecondary administrators were asked to rate how familiar they were with the Colorado Advanced Technology Institute (CATI) prior to them receiving the questionnaire. As can be seen from the responses in Table 16, the administrators reported that only 14 percent were very familiar, 72 percent somewhat familiar, and 14 percent were not familiar with CATI. Industry executives reported only 6 percent were very familiar, 22 percent somewhat familiar, and 72 percent were not familiar with CATI. This fact indicates that industry has not been well informed regarding CATI and the benefits it may offer high tech industries. A significant difference between small and large high tech businesses did exist in that larger firms tended to be more familiar with CATI than the smaller firms.

The majority of out-of-state administrators, 62.9 percent, indicated that their state did not have a state high tech institute similar to CATI.

TABLE 16. Familiarity With CATI.*

	Percent			Significance of Small Business and Large Business X^2 Value
	Very Familiar	Somewhat Familiar	Not Familiar	
Colorado Postsecondary Institutions	14.0	72.0	14.0	
Total Industry	6.0	22.0	72.0	
Small Business	1.0	21.4	77.6	
Large Business	14.8	24.1	61.1	.0018**

*Responses listed by percentages.
**Significant at the .05 level.

Benefits CATI or High Tech Institute Would Offer Industry or Educational Institution

Each group was asked if they felt CATI or a high tech institute would be of benefit to their organizations or institutions. The information contained in Table 17 illustrated that a very small percentage of each group (5 percent in-state administrators, 4.3 percent out-of-state

TABLE 17. Benefits CATI or High Tech Institute Will Offer Industry or Educational Institution.*

Group	Percent				Significant of In-State/ Out-of-State X^2 Value	Significant of Small/Large Business X^2 Value
	Great Benefit	Some Benefit	No Benefit	No Opinion		
In-State Administrators	5.0	45.0	35.0	15.0	.9261	
Out-of-State Administrators	4.3	53.2	31.9	10.6		
Small Business	3.1	60.1	32.8	4.0		.0012**
Large Business	15.5	73.8	6.7	4.0		
Total Industry	8.0	67.0	21.0	4.0		

*Based on values: 1 - great benefit; 2 - some benefit; 3 - no benefit; and 4 - no opinion and listed by percentages.
**Significant at the .05 level.

administrators, and 8 percent of total industry executives) indicated that CATI or a high tech institute would be of great benefit. However, 45 percent of the in-state administrators and 53.2 percent of the out-of-state administrators stated that CATI or an institute would be of some benefit, 35.0 percent and 31.9 percent respectfully indicated no benefit, and 15.0 percent and 10.6 percent respectively reported no opinion. Only 50 percent of the in-state administrators and 57.5 percent of the out-of-state administrators had positive feelings toward CATI or a high tech institute. No real difference existed in the perceptions of the administrators with regard to the benefits of CATI or an institute had to offer educational institutions.

However, industry executives generally held a positive attitude toward CATI or a high tech institute in that 8 percent stated it would be of great benefit, 67 percent of some benefit, 21 percent no benefit, and only 4 percent indicated they had no opinion. Large high tech firms favored CATI or an institute more so than did the smaller firms indicating that a difference of perceptions did exist between large and small firms on this item.

High Priority Roles of CATI as Identified by Industry Executives

"Identify new educational programs needed," "help evaluate present high tech educational programs," and "promote technical level high tech programs" were the top three priority roles listed for CATI by high tech industry executives. As can be seen in Table 18, over 50 percent of all industry executives rated these as priority roles. This was followed by "promote inservice training of high tech employees," "help institutions avoid duplication of programs," and "promote bachelor's degree level high tech programs." "Promote advanced degree level high tech programs" received the fewest responses of the 12 items listed. Considerable differences were observed, as was indicated by the chi square analysis, between the small and large businesses on 8 of the 12 roles listed. Large businesses tended to rate the importance of the priority roles higher than their smaller counterparts.

High Priority Roles of CATI/High Tech Institute as Identified by Educational Administrators

As can be seen from the data in Table 19, over 70 percent of the administrators rated (by frequency of response) "help educational institutions secure additional equipment," "help

TABLE 18. Roles That Should be a High Priority of CATI as Identified by High Industry Executives.

Roles*	Percent						Significance of Small/Large High Tech Business X^2 Value
	High Tech Industry Executives Response	High Tech Industry Executives Non-Response	Small High Tech Business Response	Small High Tech Business Non-Response	Large High Tech Business Response	Large High Tech Business Non-Response	
Identify new educational programs needed	67.9	32.1	60.8	39.2	81.5	18.5	.0084**
Help evaluate present high tech educational programs	59.0	41.0	51.0	49.0	74.1	25.9	.0053**
Promote technical-level high tech programs	56.4	43.6	51.0	49.0	66.7	33.3	.0602
Promote inservice training of high tech employees	46.8	53.2	38.2	61.8	63.0	37.0	.0032**
Help institutions avoid duplication of programs	44.2	55.8	40.2	59.8	51.9	48.1	.1632
Promote bachelor's degree level high tech programs	39.7	60.3	29.4	70.6	59.3	40.7	.0003**
Help educational institutions in securing additional equipment	37.8	62.2	31.4	68.6	50.0	50.0	.0225**
Promote research in high tech area	35.3	64.7	28.4	71.6	48.1	51.9	.0142**
Promote/designate centers of excellence at institutions of higher learning	34.0	66.0	27.5	72.5	46.3	53.7	.0181**
Help institutions secure additional money	33.3	66.7	28.4	71.6	42.6	57.4	.0743
Promote advanced degree level high tech programs	29.5	70.5	21.6	78.4	44.4	55.6	.0029**

*Ranked by frequency of responses.
**Significant at the .05 level.

TABLE 19. Roles That Should be a High Priority of CATI or a High Technology Institute as Identified by Administrators.

Roles[a]	Percent						Significance of In-State/ Out-of-State Administrators X^2 Value[b]
	Colorado Administrators Response	Colorado Administrators Non-Response	Out-of-State Administrators Response	Out-of-State Administrators Non-Response	All Administrators Response[c]	All Administrators Non-Response	
Help educational institutions secure additional equipment	91.3	8.7	79.6	20.4	83.3	16.7	.2137
Help educational institutions secure additional money	87.0	13.0	65.3	34.7	72.2	27.8	.0558
Identify new educational programs needed	82.6	17.4	85.7	14.3	84.7	15.3	.7327
Promote technical-level high tech programs	82.6	17.4	71.4	28.6	75.0	25.0	.3070
Help institutions avoid duplication of programs	69.6	30.4	55.1	44.9	59.7	40.3	.2433
Promote inservice training of high tech employees	69.6	30.4	75.5	24.5	73.6	26.4	.5936
Promote research in high tech area	65.2	34.8	46.9	53.1	52.8	47.2	.1475
Help evaluate present educational high tech programs	56.5	43.5	53.1	46.9	54.2	45.8	.7835
Promote/designate high tech centers at institutions of higher learning	47.8	52.2	51.0	49.0	50.0	50.0	.8005
Promote bachelor's degree-level high tech programs	39.1	60.9	38.8	61.2	38.9	61.1	.9770
Promote advanced degree-level high tech programs	34.8	65.2	34.7	65.3	34.7	65.3	.9941

[a]Ranked by frequency of responses.
[c]Includes administrators of public two-year postsecondary institutions in Colorado and from 12 other selected states.
[b]No significant values at the .05 level.

educational institutions secure additional money," "identify new educational programs needed," and "promote technical level high tech programs" as high priority roles for CATI or a high tech institute. "Promote bachelor's degree level high tech programs" and "promote advanced degree level high tech programs" were ranked as a low priority for a high tech institute like CATI. There were no significant differences between the in-state and out-of-state administrators in regard to the 12 roles listed as important for a high technology institute. In comparing the industry executives and educational administrators on the same 12 factors, there were some differences in the rank order of the 12 items. However, if the first two items ranked as a high priority by the administrators were ignored, the order of the remaining items would be very similar between the two groups indicating that between the groups "identify new educational programs needed," "promote technical level high tech programs," "help institutions avoid duplication of programs," and "promote inservice training of high tech programs" should be a high priority for CATI.

Governing Commission of CATI

As shown in Table 20, both high tech industry executives and Colorado public two-year postsecondary administrators indicated their first choice for the composition of the governing commission of CATI would include representatives from "high tech industries, public-research oriented institutions, and public postsecondary institutions preparing technicians." Thirty-nine percent of the industry executives and 33 percent of the Colorado postsecondary administrators favored the composition of "high tech industries and all postsecondary institutions." Only 13 percent of the executives and 4.8 percent of the administrators favored "high tech industries and public-research oriented institutions." The data indicated that both groups believed that institutions preparing technicians should definitely be represented on the governing commission of CATI.

TABLE 20. Recommended Composition of the Governing Commission of CATI.

Composition*	Percent	
	High Tech Industry Executives	Colorado Two-Year Postsecondary Administrators
High tech industries, public research-oriented institutions, and public postsecondary institutions preparing technicians	43.0	61.9
High tech industries and all postsecondary institutions	39.0	33.0
High tech industries and public research-oriented institutions	13.0	4.8
Others	5.0	.3

*Ranked by frequency of responses.

Should Two-Year/Four-Year Institutions be Designated as Centers of Excellence in Specific High Tech Fields

The data included in Table 21 indicated that 48 percent of the high tech industry executives and 59 percent of the Colorado public two-year postsecondary administrators favored designating certain two-year and/or four-year institutions as "centers of excellence in specific high tech fields. However, 52 percent of the industry executives and 41 percent of the administrators indicated "no" or "no opinion" to this item. This high percentage may indicate again that both educators and industry executives were not familiar with the benefits of designating institutions as centers of excellence.

TABLE 21. Response to the Question, "Should Certain Two-Year/Four-Year Institutions be Designated as Centers of Excellence in Specific High Tech Fields?"

Respondent	Percent		
	Yes	No	No Opinion
High Tech Industry Executives	48.0	18.0	34.0
Colorado Two-Year Postsecondary Administrators	59.0	14.0	27.0

APPENDICES

APPENDIX A

Survey Mailing List of Colorado Public Two-Year Postsecondary Institutions

Dr. Nancy L. Goodwin
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Arapahoe Community College
5900 South Santa Fe Drive
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Dr. N. K. Chang
Executive Director
Community College of Aurora
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Dr. G. Owen Smith
President
Community College of Denver
1600 Downing
Denver, CO 80218

Dr. John H. Swenson
President
Front Range Community College
3645 West 112th Avenue
Westminster, CO 80030

Dr. Myer L. Titus
Vice President
Denver Auraria Community College
1111 West Colfax
Denver, CO 80204

Dr. Richard E. Wilson
President
Red Rocks Community College
12600 West Sixth Avenue
Golden, CO 80401

Mr. Marvin E. Lane
Chief Administrative Officer
Lamar Community College
2401 South Main Street
Lamar, CO 81052

Dr. Larry Carter
President
Morgan Community College
17800 Road 20
Fort Morgan, CO 80701

Dr. William L. McDivitt
President
Otero Junior College
La Junta, CO 81050

Dr. Donald McInnis
President
Pikes Peak Community College
5675 South Academy Boulevard
Colorado Springs, CO 80906

Dr. Thomas W. Sullivan
President
Trinidad State Junior College
Trinidad, CO 81082

Dr. Ron Meek
President
Pueblo Community College
900 West Orman Avenue
Pueblo, CO 81004

Dr. George R. Conger
President
Aims Community College
P.O. Box 69
Greeley, CO 80632

Dr. F. Dean Lillie
President
Colorado Mountain College
P.O. Box 10001
Glenwood Springs, CO 81602

Dr. James H. Bos
President
Colorado Northwestern
Community College
Rangely, CO 81648

Dr. Marvin Weiss
President
Northeastern Junior College
100 College Drive
Sterling, CO 80751

Mr. Harold Dunning
Director
Aurora Public Schools Technical
Center
500 Buckley Road
Aurora, CO 80011

Dr. Stan Lancaster
Director
Vocational and Adult Education
Boulder Valley School Dist. RE-2
P.O. Box 9011
Boulder, CO 80301

Mr. Ladell Thomas
Emily Griffith Opportunity School
1250 Welton
Denver, CO 80204

Dr. Howard Acott
Director
San Juan Basin AVS
P.O. Box 970
Cortez, CO 81321

Mr. Harry Anderson
Director
Delta-Montrose AVS
1765 U.S. Highway 50
Delta, CO 81416

Mr. Jack Stoddard
Director
Larimer County Vocational-
Technical Center
P.O. Box 2397
Fort Collins, CO 80522

Mr. Sam Lincoln
Director
San Luis Valley AVS
209 Victoria
Alamosa, CO 81101

APPENDIX B

Survey Mailing List of Out-of-State Postsecondary Institutions

KENNETH E BORLAND
PRESIDENT
ARIZONA WESTERN COLLEGE
YUMA ARIZONA 85364

BILL BUTTERY
CAMPUS DEAN
ARAVAIPA CAMPUS
WINKLEMAN ARIZONA 85292

ANDREW S MORELAND
PRESIDENT
COCHISE COLLEGE
DOUGLAS ARIZONA 85607

DANIEL HONAHNI
PRESIDENT
COLLEGE OF GANADO
GANADO ARIZONA 86505

WAYNE M MCGRATH
PRESIDENT
EASTERN ARIZONA COLLEGE
THATCHER ARIZONA 85552

JOHN R WALTRIP
PRESIDENT
GLENDALE COMMUNITY COLLEGE
GLENDALE ARIZONA 85302

CHARLES A GREEN
PRESIDENT
MARICOPA TECH COMM COLLEGE
PHOENIX ARIZONA 85034

WILLIAM E BERRY
PRESIDENT
PHOENIX COLLEGE
PHOENIX ARIZONA 85013

ARTHUR W DECABOOTER
PRESIDENT
SCOTTSDALE COMMUNITY COLLEGE
SCOTTSDALE ARIZONA 85253

RAUL CARDENAS
PRESIDENT
SOUTH MOUNTAIN COMM COLLEGE
PHOENIX ARIZONA 85040

KEITH A WEST
PRESIDENT
MOHAVE COMMUNITY COLLEGE
KINGMAN ARIZONA 86401

DEAN C JACKSON
PRESIDENT
NAVAJO COMMUNITY COLLEGE
TSAILE ARIZONA 86556

MARVIN L VASHER
PRESIDENT
NORTHLAND PIONEER COLLEGE
HOLBROOK ARIZONA 86025

S JAMES MANILLA
PRESIDENT
PIMA COMMUNITY COLLEGE
TUCSON ARIZONA 85709

JOSEPH F RUSSO
PRESIDENT
YAVAPAI COLLEGE
PRESCOTT ARIZONA 86301

JOHN L BULLER
PRESIDENT
COASTLINE COMMUNITY COLLEGE
FOUNTAIN VALLEY CA 92708

EUGENE SCHUMACHER
PRESIDENT
COLLEGE OF THE SISKIYOUS
WEED CA 96094

THOMAS H CLEMENTS
PRESIDENT
FOOTHILL COLLEGE
LOS ALTOS HILLS CA 94022

WALLACE F COHEN
PRESIDENT
CUYAMACA COLLEGE
EL CAJON CA 92020

JOHN J COLLINS
PRESIDENT
BAKERSFIELD COLLEGE
BAKERSFIELD CA 93305

PAUL D ALCANTRA
PRESIDENT
PORTERVILLE COLLEGE
PORTERVILLE CA 93257

THOMAS L STEVENS JR
PRESIDENT
L A TRADE-TECHNICAL COLLEGE
LOS ANGELES CA 90015

VINCENT PADILLA
PRESIDENT
COSUMNES RIVER COLLEGE
SACRAMENTO CA 95823

DENNIS M MAYER
PRESIDENT
MT SAN JACINTO COLLEGE
SAN JACINTO CA 92383

PHILIP BORST
PRESIDENT
FULLERTON COLLEGE
FULLERTON CA 92634

JOHN B GREENE
PRESIDENT
MERRITT COLLEGE
OAKLAND CA 94619

ALLEN J REPASHY
PRESIDENT
SAN DIEGO CITY COLLEGE
SAN DIEGO CA 92101

CLYDE C MCCULLY
PRESIDENT
FRESNO CITY COLLEGE
FRESNO CA 93741

RICHARD A GLENN
PRESIDENT
VENTURA COLLEGE
VENTURA CA 93003

LOUIS E ZELLERS
PRESIDENT
MODESTO JUNIOR COLLEGE
MODESTO CA 95350

MAXWELL C KING
PRESIDENT
BREVARD COMMUNITY COLLEGE
COCOA FL 32922

HENRY E GOODLETT
PRESIDENT
CENTRAL FLORIDA COMM COLLEGE
OCALA FL 32678

CHARLES H POLK
PRESIDENT
DAYTONA BEACH COMM COLLEGE
DAYTONA BEACH FL 32015

WILLIAM A SEEKER
PRESIDENT
FLORIDA KEYS COMM COLLEGE
KEY WEST FL 33040

BARBARA HOLMES
INTERIM PRESIDENT
HILLSBOROUGH COMM COLLEGE
TAMPA FL 33622

HERMAN A HEISE
PRESIDENT
INDIAN RIVER COMM COLLEGE
FORT PIERCE FL 33450

GARY P SIMS
PRESIDENT
NORTH FLORIDA JUNIOR COLLEGE
MADISON FL 32340

EDWARD M EISSEY
PRESIDENT
PALM BEACH JUNIOR COLLEGE
LAKE WORTH FL 33461

MILTON O JONES
PRESIDENT
PASCO-HERNANDO COMM COLLEGE
DADE CITY FL 33525

MARYLY VANLEER PECK
PRESIDENT
POLK COMMUNITY COLLEGE
WINTER HAVEN FL 33880

CARL M KUTTLER JR
PRESIDENT
ST PETERSBURG JUNIOR COLLEGE
ST PETERSBURG FL 33733

EARL S WELDON
PRESIDENT
SEMINOLE COMMUNITY COLLEGE
SANFORD FL 32771

WILLIAM A STALLARD
PRESIDENT
SOUTH FLORIDA JUNIOR COLLEGE
AVON PARK FL 33825

JAMES F GOLLATTSCHECK
PRESIDENT
VALENCIA COMMUITY COLLEGE
ORLANDO FL 32802

STANLEY R ANDERSON
PRESIDENT
ABRAHAM BALDWIN AGRI COLLEGE
TIFTON GA 31793

B R TILLEY
PRESIDENT
ALBANY JUNIOR COLLEGE
ALBANY GA 31707

EDWIN A THOMPSON
PRESIDENT
ATLANTA JUNIOR COLLEGE
ATLANTA GA 30310

EDWARD D MOBLEY
PRESIDENT
BAINBRIDGE JUNIOR COLLEGE
BAINBRIDGE GA 31717

JOHN W TEEL
PRESIDENT
BRUNSWICK JUNIOR COLLEGE
BRUNSWICK GA 31523

HARRY S DOWNS
PRESIDENT
CLAYTON JUNIOR COLLEGE
MORROW GA 30260

DERRELL C ROBERTS
PRESIDENT
DALTON JUNIOR COLLEGE
DALTON GA 30720

MARVIN M COLE
PRESIDENT
DEKALB COMMUNITY COLLEGE
CLARKSTON GA 30021

WILLIE O GUNN
PRESIDENT
EMANUEL COUNTY JUNIOR COLLEGE
SWAINSBORO GA 30401

DAVID B MCCORKLE
PRESIDENT
FLOYD JUNIOR COLLEGE
ROME GA 30163

HUGH M MILLS JR
PRESIDENT
GAINESVILLE JUNIOR COLLEGE
GAINESVILLE GA 30503

JERRY M WILLIAMSON
PRESIDENT
GORDON JUNIOR COLLEGE
BARNESVILLE GA 30204

WILLIAM W WRIGHT
PRESIDENT
MACON JUNIOR COLLEGE
MACON GA 31297

LOUIS C ALDERMAN JR
PRESIDENT
MIDDLE GEORGIA COLLEGE
COCHRAN GA 31014

CHRIS SZIMERE
ACTING PRESIDENT
SOUTH GEORGIA COLLEGE
DOUGLAS GA 31533

BRUCE R WISSORE
PRESIDENT
BELLEVILLE AREA COLLEGE
BELLEVILLE IL 62221

WILLIAM M ANDERSON
PRESIDENT
CARL SANDBURG COLLEGE
GALESBURG IL 61401

HOMER D FRANKLIN
PRESIDENT
OLIVE HARVEY COLLEGE
CHICAGO IL 60628

WALLACE B APPELSON
PRESIDENT
TRUMAN COLLEGE
CHICAGO IL 60640

ERNEST V CLEMENTS
PRESIDENT
WILBUR WRIGHT COLLEGE
CHICAGO IL 60634

JOSEPH C PILAND
PRESIDENT
HIGHLAND COMMUNITY COLLEGE
FREEPORT IL 61032

JAMES B BENEDICT
PRESIDENT
WABASH VALLEY COLLEGE
MT CARMEL IL 62863

HAROLD R ONEIL
PRESIDENT
JOHN A LOGAN COLLEGE
CARTERVILLE IL 62918

DEREK N NUNNEY
PRESIDENT
JOLIET JUNIOR COLLEGE
JOLIET IL 60436

WILBUR R L TRIMPE
PRESIDENT
LEWIS AND CLARK COMM COLLEGE
GODFREY IL 62035

FRED GASKIN
PRESIDENT
MORAINE VALLEY COMM COLLEGE
PALOS HILLS IL 60465

HARRY J BRAUN
PRESIDENT
REND LAKE COLLEGE
INA IL 62846

LOREN E KLAUS
PRESIDENT
SHAWNEE COMMUNITY COLLEGE
ULLIN IL 62992

PAUL C GIANINI JR
PRESIDENT
SPOON RIVER COLLEGE
CANTON IL 61520

JOHN J SWALEC
PRESIDENT
WAUBONSEE COMMUNITY COLLEGE
SUGAR GROVE IL 60554

NEIL CHRISTENSON
PRESIDENT
ANOKA-RAMSEY COMM COLLEGE
COON RAPIDS MN 55433

PHILLIP J ANDERSON
PRESIDENT
ARROWHEAD COMMUNITY COLLEGE
HIBBING MN 55746

RAY KENNEY
PROVOST
VERMILION CAMPUS
ELY MN 55731

JAMES O FLANNERY
ACTING PRESIDENT
AUSTIN COMMUNITY COLLEGE
AUSTIN MN 55912

CLARENCE HEINE
PRESIDENT
BRAINERD COMMUNITY COLLEGE
BRAINERD MN 56401

WALLACE SIMPSON
PRESIDENT
INVER HILLS COMMUNITY COLLEGE
INVER GROVE HGHTS MN 55075

EARL W BOWMAN JR
PRESIDENT
MINNEAPOLIS COMM COLLEGE
MINNEAPOLIS MN 55403

DALE A LORENZ
PRESIDENT
NORMANDALE COMMUNITY COLLEGE
BLOOMINGTON MN 55431

JOHN F HELLING
PRESIDENT
NORTH HENNEPIN COMM COLLEGE
BROOKLYN PARK MN 55445

THEODORE A EASTON
PRESIDENT
NORTHLAND COMMUNITY COLLEGE
THIEF RIVER FALLS MN 56701

GERALDINE A EVANS
PRESIDENT
ROCHESTER COMMUNITY COLLEGE
THIEF RIVER FALLS MN 55901

FREDERICK A VODA
PRESIDENT
WORTHINGTON COMMUNITY COLLEGE
WORTHINGTON MN 56187

PRESIDENT
UNIV OF MINN TECH COLLEGE
MINNEAPOLIS MN 55455

STANLEY O SAHLSTROM
PROVOST
CROOKSTON CAMPUS
CROOKSTON MN 56716

EDWARD C FREDERICK
PROVOST
WASECA CAMPUS
WASECA MN 56093

LOUIS E SAAVEDRA
PRESIDENT
ALBUQUERQUE TECH VOC INST
ALBUQUERQUE NM 87106

JAY GURLEY
PROVOST
CLOVIS CAMPUS
CLOVIS NM 88101

LOYD R HUGHES
PROVOST
ROSWELL CAMPUS
ROSWELL NM 88201

JON C WADE
PRESIDENT
INST OF AMERICAN IND ARTS
SANTA FE NM 87501

SAMUEL F VIGIL
PRESIDENT
LUNA VOC TECH INSTITUTE
LAS VEGAS NM 87701

ROBERT A ANDERSON JR
PRESIDENT
NEW MEXICO JUNIOR COLLEGE
HOBBS NM 88240

GERALD CHILDRESS
SUPERINTENDENT
NEW MEXICO MILITARY INST
ROSWELL NM 88201

CHARLES R REIDLINGER
CAMPUS DIRECTOR
ALAMOGORDO CAMPUS
ALAMOGORDO NM 88310

SHELTON W MARLOW
DIRECTOR
CARLSBAD CAMPUS
CARLSBAD NM 88220

PATRICIO G QUINTANA
DIRECTOR
DONA ANA BRANCH
LAS CRUCES NM 88003

DONACIANO E GONZALEZ
CAMPUS DIRECTOR
GRANTS CAMPUS
GRANTS NM 87020

FRANK A SERRANO
PRESIDENT
NORTHERN NM COMM COLLEGE
EL RITO NM 87530

JAMES C HENDERSON
PRESIDENT
SAN JUAN COLLEGE
FARMINGTON NM 87401

JOHN M PHILLIPS
DIRECTOR
GALLUP COMPUS
GALLUP NM 87301

HERBERT C LYON
DIRECTOR
LOS ALAMOS
LOS ALAMOS NM 87544

GORDON C BLANK
PRESIDENT
ADIRONDACK COMMUNITY COLLEGE
GLENS FALLS NY 12801

IRA L JASKOLL
DIRECTOR
BRAMSON ORT TECH INST
NEW YORK NY 10010

ROGER A VAN WINKLE
PRESIDENT
COLUMBIA-GREENE COMM COLLEGE
HUDSON NY 12534

JERRRY A LEE
PRESIDENT
DUTCHESS COMMUNITY COLLEGE
POUGHKEEPSIE NY 12601

MARVIN J FELDMAN
PRESIDENT
FASHION INST OF TECHNOLOGY
NEW YORK NY 10001

STUART STEINER
PRESIDENT
GENESEE COMMUNITY COLLEGE
BATAVIA NY 14020

JOSEPH J BULMER
PRESIDENT
HUDSON VALLEY COMM COLLEGE
TROY NY 12180

JOHN T HENDERSON
PRESIDENT
JEFFERSON COMMUNITY COLLEGE
WATERTOWN NY 13601

PETER A SPINA
PRESIDENT
MONROE COMMUNITY COLLEGE
ROCHESTER NY 14623

SEAN A FANELLI
PRESIDENT
NASSAU COMMUNITY COLLEGE
GARDEN CITY NY 11530

ROBERT D LARSSON
ACTING PRESIDENT
NORTH COUNTRY COMM COLLEGE
SARANAC LAKE NY 12983

ALBERT M AMMERMAN
PRESIDENT
SUFFOLK COUNTY COMM COLLEGE
SELDEN NY 11784

DOUGLAS LIBBY
ACTING PRESIDENT
TOMPKINS-CORTLAND COMM COLL
DRYDEN NY 13053

ROBERT T BROWN
PRESIDENT
ULSTER COUNTY COMM COLLEGE
STONE RIDGE NY 12484

JOSEPH N HANKIN
PRESIDENT
WESTCHESTER COMM COLLEGE
VALHALLA NY 10595

HARVEY L HAYNES
PRESIDENT
ASHEVILLE-BUNCOMBE TEC COLL
ASHEVILLE NC 28801

WILLIAM D KILLIAN
PRESIDENT
BLUE RIDGE TECHNICAL CENTER
FLAT ROCK NC 28731

MALCOLM J MCLEOD
PRESIDENT
CAPE FEAR TECHNICAL CENTER
WILMINGTON NC 28401

ROBERT E PAAP
PRESIDENT
CATAWBA VALLEY TECH CENTER
HICKORY NC 28601

RICHARD H HAGEMEYER
PRESIDENT
CENTRAL PIEDMONT COMM COLLEGE
CHARLOTTE NC 28235

HOWARD E BOUDREAU
PRESIDENT
FAYETTEVILLE TECHNICAL INST
FAYETTEVILLE NC 28303

RAY NEEDHAM
PRESIDENT
GUILFORD TECHNICAL INST
JAMESTOWN NC 27282

JOHN A PRICE
PRESIDENT
MCDOWELL TECHNICAL COLLEGE
MARION NC 28752

WILLIAM E FULFORD JR
PRESIDENT
PITT COMMUNITY COLLEGE
GREENVILLE NC 27834

EDWARD H WILSON
PRESIDENT
ROANOKE-CHOWAN TECH COLLEGE
AHOSKIE NC 27910

CLIFTON W PADERICK
PRESIDENT
SAMPSON TECHNICAL COLLEGE
CLINTON NC 28328

SWANSON RICHARDS
PRESIDENT
SURRY COMMUNITY COLLEGE
DOBSON NC 27017

JIM A RICHARDSON
PRESIDENT
WESTERN PIEDMONT COMM COLL
MORGANTON NC 28655

DAVID E DANIEL
PRESIDENT
WILKES COMMUNITY COLLEGE
WILKESBORO NC 28697

RONALD L DANIELS
PRESIDENT
BLUE MOUNTAIN COMM COLLEGE
PENDLETON OR 97801

JOHN W HAKANSON
PRESIDENT
CLACKAMAS COMMUNITY COLLEGE
OREGON CITY OR 97045

THOMAS GONZALES
PRESIDENT
LINN-BENTON COMM COLLEGE
ALBANY OR 97321

HOWARD D SIMS
PRESIDENT
ROGUE COMMUNITY COLLEGE
GRANTS PASS OR 97526

EMERY J SKINNER
PRESIDENT
TREASURE VALLEY COMM COLLEGE
ONTARIO OR 97914

THOMAS TEN HOEVE JR
PRESIDENT
BUTLER COUNTY COMM COLLEGE
BUTLER PA 16001

JAMES L EVANKO
EXECUTIVE DEAN
BOYCE CAMPUS
MONROEVILLE PA 15146

TERRY L DICIANNA
PRESIDENT
COMM COLL OF BEAVER COUNTY
MONACA PA 15061

JAMES A ODOM JR
PRESIDENT
HARRISBURG AREA COMM COLL
HARRISBURG PA 17110

LEWIS W OGLE
PRESIDENT
READING AREA COMM COLLEGE
READING PA 19603

FRANK L EAGLES
PRESIDENT
WILSON COUNTY TECH INST
WILSON NC 27893

FREDERICK H BOYLE
PRESIDENT
CENTRAL OREGON COMM COLLEGE
BEND OR 97701

PHILIP L BAINER
PRESIDENT
CLATSOP COMMUNITY COLLEGE
ASTORIA OR 97103

R STEPHEN NICHOLSON
PRESIDENT
MT HOOD COMMUNITY COLLEGE
GRESHAM OR 97030

JACK E BROOKINS
PRESIDENT
SOUTHWESTERN OREGON COMM COLL
COOS BAY OR 97420

I S HAKANSON
PRESIDENT
UMPQUA COMMUNITY COLLEGE
ROSEBURG OR 97470

LAURENCE V LAUTH
PRESIDENT
COMM COLL OF ALLEGHENY CTY
PITTSBURGH PA 15222

LARRY WHITWORTH
EXECUTIVE DEAN
COLLEGE CENTER - NORTH
PITTSBURGH PA 15237

ALLEN T BONNELL
PRESIDENT
COMM COLL OF PHILADELPHIA
PHILADELPHIA PA 19107

EDMOND A WATTERS
PRESIDENT
MONTGOMERY CTY COMM COLL
BLUE BELL PA 19422

NORMAN P SHEA
PRESIDENT
WESTMORELAND CTY COMM COLL
YOUNGWOOD PA 15697

DONALD H BASSIST
PRESIDENT
BASSIST COLLEGE
PORTLAND OR 97201

ARTHUR A BINNIE
PRESIDENT
CHEMEKETA COMMUNITY COLLEGE
SALEM OR 97309

ELDON G SCHAFER
PRESIDENT
LANE COMMUNITY COLLEGE
EUGENE OR 97405

JOHN H ANTHONY
PRESIDENT
PORTLAND COMMUNITY COLLEGE
PORTLAND OR 97219

ROY B MASON II
PRESIDENT
TILLAMOOK BAY AREA ED DIST
BAY CITY OR 97107

CHARLES E ROLLINS
PRESIDENT
BUCKS COUNTY COMM COLLEGE
NEWTON PA 18940

DONALD G BULL
ACTING EXECUTIVE DEAN
ALLEGHENY CAMPUS
PITTSBURGH PA 15212

ROBERT M JOHNSTON
ACTING EXECUTIVE DEAN
SOUTH CAMPUS
WEST MIFFLIN PA 15122

RICHARD DECOSMO
PRESIDENT
DELAWARE CTY COMM COLLEGE
MEDIA PA 19063

ROBERT J KOPECEK
PRESIDENT
NORTHHAMPTON CTY AREA CC
BETHLEHEM PA 18017

CECIL L GROVES
PRESIDENT
AUSTIN COMMUNITY COLLEGE
AUSTIN TX 78768

LUIS M MORTON JR
CHANCELLOR
CENTRAL TEXAS COLLEGE
KILLEEN TX 76542

JACK E STONE
PRESIDENT
GALVESTON COLLEGE
GALVESTON TX 77550

JOE A AIROLA
PRESIDENT
NORTH HARRIS COUNTY COLLEGE
HOUSTON TX 77073

RAYMOND M HAWKINS
PRESIDENT
TYLER JUNIOR COLLEGE
TYLER TX 75711

WILBUR A BALL
PRESIDENT
MCLANNAN COMMUNITY COLLEGE
WACO TX 76708

JEAN RICHARDSON
PRESIDENT
DEL MAR COLLEGE
CORPUS CHRISTI TX 78404

J B WHITELEY
PRESIDENT
HOUSTON COMMUNITY COLLEGE
HOUSTON TX 77007

JACK M ELSOM
PRESIDENT
RANGER JUNIOR COLLEGE
RANGER TX 76470

E W MINCE
PRESIDENT
WEATHERFORD COLLEGE
WEATHERFORD TX 76086

JACK TOMPKINS
PRESIDENT
TEXAS STATE TECH INST
WACO TX 76705

ROBERT E SHEPACK
PRESIDENT
EL PASO CTY COMM COLL DIST
EL PASO TX 79998

DOMINGO ARECHIGA
PRESIDENT
LAREDO JUNIOR COLLEGE
LAREDO TX 78040

CARL M NELSON
PRESIDENT
TEXARKANA COMMUNITY COLLEGE
TEXARKANA TX 75501

THEODORE NICKSICK JR
PRESIDENT
WHARTON CTY JUNIOR COLLEGE
WHARTON TX 77488

ROBERT H MCCABE
PRESIDENT
MIAMI-DADE COMM COLLEGE
MIAMI FL 33176

APPENDIX C

Survey Mailing List of High Tech Industry Executives in Colorado

HIGH TECH INDUSTRIES
Updated
June 12, 1984
Page 1

ALF PRODUCTS
1448 ESTES STREET
DENVER CO 80215

J F HURLBUT
APPLIED COMPUTER SYSTEMS
622 GARDENIA COURT
GOLDEN CO 80401

JULIO R ARCHILE
ARCHITRONICS CO INC
2015 SECOND AVENUE
GREELEY CO 80631

BERNIED HOPE
ARGUS SYSTEMS INC
3926 BLAKE STREET
DENVER CO 80205

MICHAEL [illegible]NDUS
AUTO-TROL TECH CORP
12500 NORTH WASH[illegible]GTON
DENVER CO 80233

DOUGLAS P GRUSH
B & B INDUSTRIES INC
1668 VALTEC LANE
BOULDER CO 80301

FLOYD BAKER
BAKER MACH & FABRICATION
12600 ROAD 14 1/2
FORT LUPTON CO 80621

JERRY DANCY
BALL AEROSPACE
PO BOX 1062
BOULDER CO 80302

V BLANCHAT
BLANCHAT MACHINE CO INC
PO BOX 1586
GRAND JUNCTION CO 81502

BEN BROWN
BROWN DISC MFG INC
1015 GARDEN/DOGS ROAD
COLORADO SPRINGS CO 80907

W BEIERWALTES
COLORADO TIME SYSTEMS INC
PO BOX 693
LOVELAND CO 80537

G SOUTHWORTH
COLORADO VIDEO INC
3245 PRAIRIE AVENUE
BOULDER CO 80302

KENNETH HOOTNICK
COMPUTER GRAPHICS CO
5200 EAST EVANS AVENUE
DENVER CO 80222

LEE HARRISON
COMPUTER IMAGE
2475 WEST SECOND AVENUE
DENVER CO 80223

THOMAS CROSS
CROSS COMMUNICATIONS
934 PEARL STREET
BOULDER CO 80302

E W CARR
DAKIN 5 CORPORATION
7475 DAKIN STREET 401
DENVER CO 80221

BRYAN ALU
DATA DISPLAY CORP
5741 ARAPAHOE ROAD
BOULDER CO 80303

BEN DAVIS
DATREX
8729 SOUTH TURKEY CREEK
MORRISON CO 80465

MAYNARD MOE
DENCOR INC
2750 SOUTH SHOSHONE
ENGLEWOOD CO 80110

JAMES HILL
DENELCOR INC
17000 EAST OHIO PLACE
AURORA CO 80017

BOB BROWNE
DIGITAL EQUIPMENT CORP
301 ROCKRIMMON BLVD SOUTH
COLORADO SPRINGS CO 80919

J DOHERTY
ELECTRONIC PROCESSORS INC
PO BOX 369
ENGLEWOOD CO 80110

MACY PRICE
ENGINEERED DATA PRODUCTS
470 EAST 76TH AVENUE
DENVER CO 80229

BOB VALDEZ
HEWLETT PACKARD COMPANY
700 71ST AVENUE
GREELEY CO 80634

C JOHNSON
HONEYWELL INC
TEST INSTRU DIV
4800 EAST DRY CREEK ROAD
DENVER CO 80217

KENNY DRISCOLL
MICRO METALS
690 ELKTON DRIVE
COLORADO SPRINGS CO 80907

HUBERT DEVRIES
MONOLITHIC SYSTEMS CORP
84 INVERNESS CIRCLE EAST
ENGLEWOOD CO 80112

JOHN MYER
NBI INC
3450 MITCHELL LANE
PO BOX 9001
BOULDER CO 80301

THOMAS HOEKELMAN
NOVATECH CORPORATION
226 COMMERCE STREET
BROOMFIELD CO 80020

HIGH TECH INDUSTRIES
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Page 2

GARY OLSON
OWL TECHNICAL ASSN INC
1111 DELAWARE AVENUE
LONGMONT CO 80501

JAMES VARNER
PRECISION VISUALS INC
250 ARAPAHOE AVENUE
BOULDER CO 80302

THOMAS MELHORN
PRINTERS COMPUTER SYM INC
3309 LAKESIDE DRIVE
LONGMONT CO 80501

DIETER HIEDRICH
PROLINK CORPORATION
5757 CENTRAL AVENUE
BOULDER CO 80306

BRIAN UNDERHILL
RELA DESIGN INC
303 CANYON BLVD
BOULDER CO 80302

D EMERY
SAFETRAN TRAFFIC SYSTEMS
1485 GARDEN/GODS ROAD
COLORADO SPRINGS CO 80907

ALAN BOXER
SCI-PRO INC
8505 EAST ORCHARD ROAD
ENGLEWOOD CO 80111

DONALD JUERGENS
SPECTRON INSTRUMENT CORP
1342 WEST CEDAR AVENUE
DENVER CO 80223

ERIC PICK
STORAGE TECH CORP
2270 SOUTH 88TH
MAIL DROP NG
LOUISVILLE CO 80027

J AWEIDA
STORAGE TECHNOLOGY CORP
2270 SOUTH 88TH STREET
LOUISVILLE CO 80027

RONALD STALLINGS
SURE DATA SYSTEMS INC
2017 NINTH STREET
GREELEY CO 80631

HOWARD KAISER
SYSTEM DEVELOPMENT CORP
2930 AUSTIN BLUFFS
COLORADO SPRINGS CO 80907

KEN DIXON
SYSTEMS ENGINEERING ASSN
PO BOX 750
ARVADA CO 80001

RICHARD SOCASH
TENTIME
5375 WESTERN AVENUE
BOULDER CO 80301

MERRIAL HIGHBARGER
VENTURE MFG CO INC
1727-H CONESTOGA STREET
BOULDER CO 80301

WILLIAM KELVER
WESTERN MEDIA PRODUCTS INC
3940 GRAPE STREET
DENVER CO 80207

BILL FINCH
ZERO PAGE INC
2380 NAEGELE ROAD
COLORADO SPRINGS CO 80904

EDWIN ADAMS
ADCOM TRANSFORMER INC
517 MANITOU AVENUE
COLORADO SPRINGS CO 80829

MAJORIE WAMBOLDT
ADDISON CONSOLIDATED ENG
1355 HARLAN STREET
LAKEWOOD CO 80214

ALAN CAPRA
CABLEX INC
14 INVERNESS DRIVE
BUILDING H136
ENGLEWOOD CO 80112

JOE COFFELT
COFFELT ELECTRONICS CO INC
2910 SOUTH WINDERMERE STREET
ENGLEWOOD CO 80110

D J MORRONI
ELECTRIC EQUIP & ENG CO
PO BOX 16383
DENVER CO 80216

BILL CHANDLER
ELECTRO-MECH CO
707 HATHAWAY DRIVE
COLORADO SPRINGS CO 80915

LESLIE BRIGGS
LESTRONICS INC
1840 INDUSTRIAL CIRCLE
LONGMONT CO 80501

CARL FORSBERG
MAGNETECK CORPORATION
7315 RED DEER DRIVE
BOULDER CO 80301

DENNIS S COOK
MARTIN MARIETTA
BOX 179
MAIL #1004
DENVER CO 80201

DONALD REED
REED CYBERDYNE CORP
1624 BUCKEYE
FORT COLLINS CO 80524

TROY VALDEZ
TRANEX INC
2527 WESTOL[illegible]AD
COLORADO SPRINGS CO 80910

J H KISER
VARI-L COMPANY INC
11101 EAST 51ST AVENUE
DENVER CO 80239

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J E ANDERSON
ZIA ASSOCIATES INC
1830 NORTH 55TH STREET
BOULDER CO 80301

W T EASTER
EASTER-OWENS ELECTRIC CO
610 SOUTH LIPAN
DENVER CO 80223

R G GUTRU
ELECTRIC POWER EQUIP CO
5151 EAST 56TH AVENUE
COMMERCE CITY CO 80022

RICHARD CASE
LORD ELECTRIC
2780 SOUTH RARITAN STREET
ENGLEWOOD CO 80110

ALBERT MINNE
MINNETRONICS CORP
1294 SOUTH CHAMBERS ROAD
AURORA CO 80012

R E MUNZ
MUNDIX CONTROL SYSTEMS INC
5495 MARION STREET
DENVER CO 80216

JACK BOWERS
SQUARE D CO
677 ALCOTT
DENVER CO 80204

W E YOUNG
YOUNG ELECTRIC & MFG CO
2134 CURTIS
DENVER CO 80205

FREDERICK NELSON
ADROIT SPECIALTIES SERV
5291 SOUTH SHERMAN
LITTLETON CO 80121

LARRY APPLEGATE
APCO MANUFACTURING
1461 QUINCE
DENVER CO 80220

CARLOS DEMORAES
CUSTOM ENGINEERING INC
2805 SOUTH TEJON
ENGLEWOOD CO 80110

D K TAUTZ
DELLTRONICS INC
3620 SOUTH HURON STREET
ENGLEWOOD CO 80110

R M GREER
HYDROLOGICS INC
3030 SOUTH TEJON STREET
ENGLEWOOD CO 80110

GARY KELTNER
KELTNER RESEARCH INC
4380 SOUTH FEDERAL BLVD
ENGLEWOOD CO 80110

SYLVAN TEEL
PHYL-UP REMOTE CONTROL
7580 OSCEOLA
WESTMINSTER CO 80030

WILHELM SANDER
RONDON MOTOR CONTROL LTD
6801 WEST 117TH AVENUE
BROOMFIELD CO 80020

R E BOLASNY
SCIENTIFIC ENTERPRISES INC
2801 INDUSTRIAL LANE
BROOMFIELD CO 80020

R G VAN HOUTEN
TRI-STAR CORP
730 INDEPENDENT
GRAND JUNCTION CO 81501

H W LACY
UTILITY CONTROL & EQUIP
15000 WEST 64TH AVENUE
GOLDEN CO 80401

BRUCE WADDLE
WADDLE MANUFACTURING INC
BOX 949
LONGMONT CO 80501

B W HART
WESTEC ENGINEERING INC
2537 WESTON ROAD
COLORADO SPRINGS CO 80910

BOB FERGUSON
WESTERN PANEL
12660 WEST CEDAR DRIVE
LAKEWOOD CO 80228

J E SUNDSTEDT
WOODWARD GOVERNOR CO
1000 EAST DRAKE ROAD
FORT COLLINS CO 80525

ELMER CORDOVA
E & C METAL INC
13200 TITAN ROAD SOUTH
LITTLETON CO 80125

E L DOSCH
P-A ELECTRONICS
1024 SANTA FE DRIVE
DENVER CO 80204

J HARDESTY
ULTRONIX INC
461 NORTH 22ND STREET
GRAND JUNCTION CO 81501

WILLIAM WEBB
WEBB ELECTRONICS INC
272 A SOUTH MONACO PKWY
DENVER CO 80224

DONALD ANDRES
COLORADO MFG TECHNOLOGY
4835 CENTENNIAL BLVD
COLORADO SPRINGS CO 80919

JACK NELLIGAN
COLUMBINE FABRICATORS
1865 WEST UNION AVENUE
ENGLEWOOD CO 80110

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WALTER POUNDS
K B DENVER INC
PO BOX 719
FREDERICK CO 80530

DONALD SHERWOOD
SHERWOOD ENTERPRISES
120 NINTH AVENUE
LONGMONT CO 80501

D BARKER
STORM PRODUCTS CO
2275 WEST MIDWAY BLVD
BROOMFIELD CO 80020

GAIL CLASON
AMPEX CORP
600 WOOTEN ROAD
COLORADO SPRINGS CO 80915

GEORGE MERRICK
AMPEX SWITCHER CO
10604 WEST 48TH AVENUE
WHEATRIDGE CO 80030

R N SHILLING
DATA INC
7702 EMERALD AVENUE
FORT COLLINS CO 80521

EARL MURRAY
E N MURRAY CO INC
707 UMATILLA STREET
DENVER CO 80204

STEPHEN HARMS
HARMS LABS
705 THEO AVENUE
FORT COLLINS CO 80521

D MARTINEZ
NATIONAL SPEAKER COMPANY
2332 15TH
DENVER CO 80202

S REED
REED SPEAKER CO
7530 WEST 16TH
LAKEWOOD CO 80215

BRYAON ST CLAIR
TELEVISION TECH CORP
5970 WEST 60TH AVENUE
ARVADA CO 80003

P C DOUGHERTY
VERTRONIX INC
6931 HIGHWAY 73
EVERGREEN CO 80439

T B OLSON
WESTERN ELECTRONICS CO
10551 WEST 41ST AVENUE
WHEATRIDGE CO 80033

MR KLING
CYRUS MANUFACTURING CO
5306 TENNYSON
DENVER CO 80212

G F HAFER
DAITEL RESEARCH CO INC
930 NORTH PARK AVENUE
MONTROSE CO 81401

J C SCHWEITZER
DELTA PRODUCTS INC
630 SOUTH SEVENTH
GRAND JUNCTION CO 81501

EARL CORNISH
DIVERSIFIED MFG CORP
3532 FRANKLIN STREET
DENVER CO 80205

WILLIAM SANKO
GT/SPEC SERV PROD DIV
876 VENTURA STREET
AURORA CO 80011

ORVILLE SLAUGHTER
ALPHA CORP
5366 GARFIELD
DENVER CO 80216

PAUL RAMER
ALPINE RESEARCH INC
765 INDIAN PEAKS ROAD
GOLDEN CO 80403

MICHAEL EDMONDSON
AMERICAN TELEDATA CORP
7000 BROADWAY BLDG 2
DENVER CO 80221

A B PRZEDPELSKI
ARF PRODUCTS INC
2559 NORTH 75TH STREET
BOULDER CO 80301

LAWRY PEXTON JR
ASPEN RECREATIONAL PRODUCTS
620 EAST BLEEKER
ASPEN CO 81611

R J HILL
BALL AEROSPACE SYSTEM DIV
1 PARK BUILDING
BROOMFIELD CO 80020

R H GABLEHOUSE
BALL AEROSPACE SYSTEMS DIV
BOULDER INDUSTRIAL PARK
BOULDER CO 80306

MR GRIESEMER
BASIC TELECOMMUNICATION CO
4414 EAST HARMONY ROAD
FORT COLLINS CO 80525

DON HUME
COLORADO ELECTRO-OPTICS
2200 CENTRAL AVENUE
BOULDER CO 80301

CHARLES FRY
COLTEC ELECTRONICS
831 ROYAL GEORGE BLVD
CANON CITY CO 81212

LARS WAHLIN
COLUTRON RESEARCH CORP
5420 ARAPAHOE ROAD
BOULDER CO 80303

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SHEPARD BRODIE
CONTROL SIGNAL CORP
1858 SOUTH WADSWORTH 101
LAKEWOOD CO 80226

R W EHRHORN
EHRHORN TECHNOLOGICAL OPER
INDUSTRIAL PARK
CANON CITY CO 81212

JAMES PERKINS
ELECTROSERVICE MFG
614 25TH
GREELEY CO 80631

JIM BROUGH
FIBER CLASSICS MANUFACTURING
10501 WEST 48TH AVENUE
WHEATRIDGE CO 80033

LOUIS REID
FYTRON INC
2500 CENTRAL AVENUE
BOULDER CO 80301

BILL JEFFERS
HELIOS MFG & MACH CO
1822 SUNSET PL
LONGMONT CO 80501

JOHN QUEEN
HI-V INSTRUMENTS INC
1713 WILLOX COURT
FORT COLLINS CO 80521

DAVID HOME
HOME AUDIO PRODUCTIONS
30851 BLUFF STREET
BOULDER CO 80301

S CROWN
HONEYWELL PROTECTION SERV
7108 SOUTH ALTON WAY
DENVER CO 80222

GEORGE MEEHLEIS
LITTON DATA SYSTEMS
425 EAST FILLMORE STREET
COLORADO SPRINGS CO 80907

BRIAN SHUBERT
NOVA ENGINEERING INC
67318 US HIGHWAY 285
PINE CO 80470

S D GATES
ROYAL ELECTRONICS CORP
3535 SOUTH IRVING STREET
ENGLEWOOD CO 80110

W E YARBERRY
SENTRY SIREN INC
2812 NORTH NINTH STREET
CANON CITY CO 81212

JOHN SNYDER
SNYDER ELECTRONIC SYSTEMS
105 ROSE LANE
CANON CITY CO 81212

PAUL WHITTLE
SYNERGETICS INTERNATIONAL
POE BOULDER
BOULDER CO 80306

W ABOUREZK
TRW COLORADO ELECTRONICS
3450 NORTH NEVADA AVENUE
COLORADO SPRINGS CO 80907

JOE WOODS
VIDEO AIDS OF COLORADO
1930 CENTRAL AVENUE
BOULDER CO 80301

E C VINER
VINER MFG SYSTEMS INC
8141 WEST I-70 FRONTAGE RD
ARVADA CO 80002

H H WALLOWER JR
WESTERN METAL PRODUCTS CO
150 YEJON STREET
DENVER CO 80223

THOMAS MCCASLAND
WESTERN SYSTEMS INC
30395 BRYANT DRIVE
EVERGREEN CO 80439

RICHARD WEEKS
WYOMING BIOTELEMETRY INC
1225 FLORIDA AVENUE
LONGMONT CO 80501

HANS BUCHER
XEDAR CORPORATION
2500 CENTRAL AVENUE
BOULDER CO 80301

RON KARNIK
AMERICAN VIDEO
3815 WEST SIXTH AVENUE C
LAKEWOOD CO 80214

JOHN RIGGEN
HEWLETT PACKARD COMPANY
1900 GARDEN/GODS ROAD
COLORADO SPRINGS CO 80907

RICHARD WEBB
DATA RAY CORP
PO BOX 368
BROOMFIELD CO 80020

W BAYNE GIBSON
VAC-TEC SYSTEMS INC
2590 CENTRAL AVENUE
BOULDER CO 80301

DAVE HOWTEN
B I INC
2450 CENTRAL AVENUE
BOULDER CO 80301

LLOYD WILCOX
CHESS INC
955 BANNOCK
DENVER CO 80204

HERBERT SANDMANN
COLORADO COMPONENTS
800 HOYT STREET
BROOMFIELD CO 80020

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CLAYTON DUPUE
FORMISTOR CORPORATION
7000 BROADWAY #203
DENVER CO 80221

BRIAN HEGARTY
HONEYWELL INC
1150 EAST CHEYENNE MTN
COLORADO SPRINGS CO 80906

JOHN HEIGHTLEY
INMOS CORPORATION
1110 BAYFIELD DRIVE
COLORADO SPRINGS CO 80906

GERALD ISAACSON
ION TECH INC
1807 EAST MULBERRY STREET
FORT COLLINS CO 80524

CAL RANSOM
MOSTEK CORPORATION
1575 GARDEN/GODS ROAD
COLORADO SPRINGS CO 80907

LOWELL DECKARD
NCR CORP MICROELECTRONICS
2850 NORTH EL PASO STREET
COLORADO SPRINGS CO 80907

MIKE MORRISSEY
NCR CORP MICROELECTRONICS
2001 DANFIELD COURT
FORT COLLINS CO 80525

JOSEPH CURRY
STC MICROTECHNOLOGY CORP
2270 S 88TH ST MAIL DROP G-1
LOUISVILLE CO 80028

C R CUSHMAN
TRIENCO INC
205 APOLLO ROAD
MONTROSE CO 81401

GORDON HOFFMAN
UNITED TECHNOLOGIES
1365 GARDEN/GODS
COLORADO SPRINGS CO 80902

CLARENCE WOOD
CAPCO INC
1328 WINTERS AVENUE
GRAND JUNCTION CO 81501

P NEIDECKER
NATIONAL WIRE SPECIAL CORP
2801 SOUTH VALLEJO
ENGLEWOOD CO 80110

SCOTT BRASWELL
ALLEN COMMUNICATION
1140 PEARL #213
BOULDER CO 80302

SID LAKS
ASPEN LIMITED
77 EAST FLOYD AVENUE
ENGLEWOOD CO 80110

BARRY PULS
ASSEMBLIES UNLIMITED
626 SOUTH SUNSET
LONGMONT CO 80501

D E LEITNER
ASTRO ENDYNE COMPANY INC
1770 RANGE UNITA
BOULDER CO 80301

DARREL SCHULTE
AUTOMATED CONTROLS INC
5485 HARLAN STREET
ARVADA CO 80002

RALPH BUTTS
BALL CORP
PO BOX 1068
BOULDER CO 80306

JACK FRITZLEN
CMI INC
PO BOX 40
MINTURN CO 81645

GILBERT LOPEZ
CENCORP
PO BOX 636
BOULDER CO 80306

J W CONWAY JR
CENTER LINE CIRCUITS INC
1820 INDUSTRIAL CIR
LONGMONT CO 80501

K P CHALFANT
CHALFANT RESEARCH & DEV
2842 NORTH INSTITUTE
COLORADO SPRINGS CO 80907

W C HANSEN
COLORADO CIRCUITS CORP
6827 WEST 56TH AVENUE
ARVADA CO 80002

C BRADLEY
COLORADO CRYSTAL CORP
2303 WEST EIGHTH STREET
LOVELAND CO 80537

W H KRAUS
E & S METAL PRODUCTS CO
4200 NORTH WEBER
COLORADO SPRINGS CO 80907

M A XAVIER
E MAX INSTRUMENTS INC
14 INVERNESS DRIVE E A-124
ENGLEWOOD CO 80112

FRED LAWRENCE
FAB CIRCUITS INC
3790 SOUTH JASON
ENGLEWOOD CO 80110

ROBERT SMITH
FINNIGAN CORPORATION
FLOYD HILL
EVERGREEN CO 80439

MIKE WARHOLA
FT RG CABLE CORPORATION
PO BOX 1038
LONGMONT CO 80501

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PAT GUY
GUYCO INDUSTRIES INC
1811 LEFTHAND CIRCLE
LONGMONT CO 80501

DEAN VETTE
HERITAGE DIE CASTING CO
2252 SOUTH KALAMATH
DENVER CO 80223

L G ZACHERL
K & L ENGINEERING
1108 EAST SEVENTH AVE CIR
BROOMFIELD CO 80020

ORVILLE SLAUGHTER
K-ALPHA CORP
5366 GARFIELD
DENVER CO 80216

A F BRIDGES
KAMAN SCIENCES CORP
PO BOX 7463
COLORADO SPRINGS CO 80933

G A KLOPPENBERG
KLOPPENBERG & COMPANY
2627 WEST OXFORD
ENGLEWOOD CO 80110

KARL ROBERTS
MAJESTIC METALS INC
6425 NORTH WASHINGTON UNIT 9
DENVER CO 80229

DAVID CARY
MECHANICAL PRODUCTS INC
585 SOUTH JASON
DENVER CO 80223

EDWARD WOMACK
MICROTOME PRECISION INC
4805 NORTHPARK DRIVE
COLORADO SPRINGS CO 80907

PATRICK ROBBEN
PRODUCTS FOR INDUSTRIES
2116 SOUTH KALAMATH
DENVER CO 80223

DAVE MCCALEB
REARDEN METAL
4020 GRANFROS ROAD W
COLORADO CITY CO 81019

R RUEILE
RELCO PRODUCTS
5594 EAST JEFFERSON AVENUE
DENVER CO 80237

FREDERICK CHURH
RESOURCE ELECTRONICS
3155 BLUFF STREET
BOULDER CO 80301

SEIKO CIRCUITS EAST
6884 EAST 48TH AVENUE
DENVER CO 80216

ERVIN HAMMEN
STANFORD APPLIED ENG
4840 NORTH 63RD STREET
BOULDER CO 80301

J H CATON
STEMCO MFG CO
4275 FOREST
DENVER CO 80216

F FLOYD
THOR ELECTRONICS
10880 LEROY DRIVE
DENVER CO 80233

B F MINN JR
UNICIRCUIT
14 INVERNESS DRIVE E SH
ENGLEWOOD CO 80112

LARRY ACORD
VITACO INDUSTRIES INC
1422 FLORIDA AVENUE
LONGMONT CO 80501

ELLIOTT BAYLE
WHIRLWIND POWER CO
5030 YORK STREET
DENVER CO 80216

JOE WOODS
WOODS ELECTRONICS
1930 CENTRAL AVENUE
BOULDER CO 80301

JOHN PICCHIOTTINO
BIO-FEEDBACK SYSTEMS INC
2736 47TH STREET
BOULDER CO 80301

LOCKETT WOOD
CYBERMEDIC INC
1341 CANNON
LOUISVILLE CO 80027

TOM TRUE
KATUM CORP
640 SOUTH SUNSET
LONGMONT CO 80501

T H THOMSON
STAODYNAMICS INC
1225 FLORIDA AVENUE
LONGMONT CO 80501

KAREN OSBAND
WESTERN LABORATORIES LTD
19423 NORTH TURKEY CREEK
MORRISON CO 80465

EARNEST STIEGELMEYER
ALTERNATIVE ENERGY INC
1905 30TH STREET
BOULDER CO 80302

JERRY CAMPBELL
CHAPMAN BROS INC
1950 SOUTH LIPAN
DENVER CO 80223

FRED CIMZAR
DAECO ELECTRIC
2360 SOUTH DELAWARE
DENVER CO 80223

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J C SCHWEITZER
DELTA PRODUCTS INC
PO BOX 1147
GRAND JUNCTION CO 81502

J D FORNEY
FORNEY INDUSTRIES INC
1830 LAPORTE
FORT COLLINS CO 80521

CLYDE ENSOR
HESCO MFG CORP
401 17TH STREET
GREELEY CO 80631

FREDERICK SOMOS
MILE HIGH AUTO ELECTRIC
4905 WASHINGTON
DENVER CO 80216

DAVID RIVERA
ROCKY MTN REBUILDERS INC
330 QUIVAS STREET
DENVER CO 80223

LEONARD LENOX
SWISS-LENOX CO INC
5612 #A KENDALL COURT
ARVADA CO 80002

EDWARD KREISER
ALURAY PROD MFG CORP
121 EAST NORTHERN AVENUE
PUEBLO CO 81002

GEORGE LOMBARDI
BIOMEDICAL PRODUCTS INC
6270 SOUTH KRAMERIA STREET
ENGLEWOOD CO 80111

R WOODWARD
CONCRETE CURING ENG INC
3116 LONGHORN ROAD
BOULDER CO 80302

LEE R HILL
GOLF CARS INTNT DBA/VEEPS
2125 SOUTH JASON
DENVER CO 80223

GENE IHLY
IHLY INDUSTRIES
2920 SOUTH VALLEJO
ENGLEWOOD CO 80110

WERNER KUHNE
MINATURE AUTOMATION SYST
PO BOX 7
PAGOSA SPRINGS CO 81147

L W VANDEVELDE
THERMA-TRU
6275 LAKE SHORE COURT
COLORADO SPRINGS CO 80915

W SCHIFANO
WILLOYD ENTERPRISES INC
2505 AGATE ROAD
BOULDER CO 80302

LINDA ROBERTS
AMERICAN LASER CORP
3655 FRONTIER STREET
BOULDER CO 80301

DONALD INGERMANN
ANDERSON & FORRESTER
6250 JOYCE DRIVE
GOLDEN CO 80401

HERB ZIMMERMAN
APPLIED TECHNOLOGIES INC
6395 GUNPARK DRIVE E
BOULDER CO 80301

DAVID CALL
ATMOSPHERIC INSTR RESEARCH
1880 SOUTH FLATIRON COURT
BOULDER CO 80301

RICHARD BALL
BALL ENGINEERING COMPANY
2140 KOHLER DRIVE
BOULDER CO 80303

VICTOR BARTUSKA
CHEMAGNETICS INC
208 COMMERCE 3C
FORT COLLINS CO 80524

KENNETH MAXWELL
DANIELS INDUSTRIES
6803 EAST 47TH AVE DR-F
DENVER CO 80216

D J OLMSTED
DENVER INSTRUMENT CO
2050 SOUTH PECOS
DENVER CO 80223

REX COPPOM
DEV INDUSTRIES
5721 ARAPAHOE AVENUE
BOULDER CO 80303

VINCENT SCHEETZ
ELECTRONIC TECHNIQUES INC
1317 WEBSTER
FORT COLLINS CO 80524

PAUL EMERLING
EMERLING MACHINE TOOLS
HIGHWAY 119
NEDERLAND CO 80466

H W SIEGEL
GEOPHYSICAL INSTR & SUP CO
4663 JOLIET
DENVER CO 80239

C C HACH
HACH COMPANY
57TH ST & LINDBERGH
LOVELAND CO 80539

BILL PARZYBOK
HEWLETT PACKARD CO
815 SW 14TH STREET
LOVELAND CO 80537

P B KAIL
KAIL PHILLIPS & ASSOC
1010 WEST FIRST AVENUE
DENVER CO 80223

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J H RICE
MINE & SMELTER DIVISION
3800 RACE STREET
DENVER CO 80216

HAROLD GRIMES
MORSE BROS MACHINERY CO
1290 HARLAN STREET
LAKEWOOD CO 80214

P E FOWLER
MT SOPRIS INSTRUMENT CO
PO BOX 449
DELTA CO 81416

ROBERT METZKER
PROTECTO-DOME CO
7849 BROCKWAY
BOULDER CO 80303

ROGER WHITE
ROGERS ARMS & MACH CO INC
1426 UTE AVENUE
GRAND JUNCTION CO 81501

ROBERT PULSIPHER
ROGERS PLASTIC MOLDING
4320 FOX
DENVER CO 80216

RICHARD CASE
SCIENTECH INC
5649 ARAPAHOE
BOULDER CO 80303

CHARLES LISS
SEALIFE INDUSTRIES
1060 WEST 70 PLACE
DENVER CO 80221

SANFORD SIMONS
SIENCO INC
9188 SOUTH TURKEY CREEK
MORRISON CO 80465

C M HAWORTH JR
TRUELINE INSTRUMENTS INC
3021 SOUTH TEJON
ENGLEWOOD CO 81001

DEAN NICHOLSON
ANDRON ELECTRIC
9947 WEST 25TH
LAKEWOOD CO 80215

LARRY JACKSON
DELTA H SYSTEMS INC
16970 ROAD 36
STERLING CO 80751

JAMES PERKINS
ELECTROSERVICE MFG
614 25TH
GREELEY CO 80631

JOHN ANDERTEN
ENERGY CONTROLS INC
394 BRYANT
DENVER CO 80219

D DOTY
HEATER METER INC
3805 WEST SIXTH AVE BLDG 1
LAKEWOOD CO 80214

GARY WHITE
HUBERLZIN PRODUCTS
629 HIGHWAY 85
AULT CO 80610

R E MUNZ
MUNDIX CONTROL SYSTEMS INC
5495 MARION STREET
DENVER CO 80216

WILLIAM HUSTON
SOLAR CONTROL CORP
2524 EAST VINE DRIVE
FORT COLLINS CO 80524

GALE ENGER
TELETRONICS CO INC
3224 HIGHWAY 6 & 24
CLIFTON CO 81520

JOHN MCKENNA
TRITEC SOLAR INDUS INC
711 FLORIDA ROAD
DURANGO CO 81301

GEORGE DEAN JR
WADSWORTH CONTROL SYSTEM
5541 MARSHALL STREET
ARVADA CO 80002

KENNETH FORSBERG
BASELINE INDUSTRIES INC
PO BOX 649
LYONS CO 80540

SAM MAPHIS
BRISCOE MAPHIS INC
5378 STERLING DRIVE
BOULDER CO 80301

THOMAS MARTIN
CO TEMP COMPONENTS INC
140 #D GARDEN/GODS ROAD
COLORADO SPRINGS CO 80907

CLYDE CONE
CONE MOUNTER COMPANY
1137 SOUTH BANNOCK STREET
DENVER CO 80223

EDWARD HUFFMAN JR
COULOMETRICS INC
3830 HIGH COURT
WHEATRIDGE CO 80033

STEPHEN GROVER
EDA
5151 WARD ROAD
WHEATRIDGE CO 80033

C E MILLER
ENGINEERING MEASUREMENTS
600 DIAGONAL HIGHWAY
LONGMONT CO 80501

D G BILLS
GRANVILLE-PHILLIPS CO
5675 EAST ARAPAHOE
BOULDER CO 80303

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DONALD RITZ
GREATER WESTERN DIST
12825 JUDGE ORR ROAD
COLORADO SPRINGS CO 80907

J E QUINN
HAZEN-QUINN PROCESS EQUIP
3400 BRIGHTON BLVD
DENVER CO 80216

STEPHEN PRICE
INEX INC
7100 BROADWAY SUITE 1-H
DENVER CO 80221

HOMER HOARD
LEAR SIEGLER INC
74 IVERNESS DRIVE E
ENGLEWOOD CO 80112

C N NORGREN
NORGREN C A CO
5400 SOUTH DELAWARE
LITTLETON CO 80120

GEORGE HEYER
SOLAR DEVELOPMENT INC
11799 EAST 30TH AVENUE
AURORA CO 80010

JACK ELMORE
SUN-HEET INC
11965 EAST 49TH AVENUE
DENVER CO 80239

NEAL WILLIAMS
SUPERFLOW
3512 NORTH TEJON
COLORADO SPRINGS CO 80907

TOM SCURRY
TSA SYSTEMS INC
PO BOX 1920
BOULDER CO 80306

M W GIESKING
WHEEL-TEK
2020 SOUTH BANNOCK STREET
DENVER CO 80223

HOWARD KELLEY
ACREAGE CONTROL SYSTEMS
1168 SOUTH ADAMS STREET
DENVER CO 80210

J L BENKE
DIETRICH STANDARD CORP
5601 NORTH 71ST
BOULDER CO 80301

L S FISHER
ELECTRIC MEASUREMENT LAB
4949 BROADWAY SE 229
BOULDER CO 80302

E E PRINCE
HATHAWAY INSTRUMENTS INC
5250 EAST EVANS
DENVER CO 80222

JIM SMITH
MICRO MOTION INC
7070 WINCHESTER CIR
BOULDER CO 80301

DOYLE THOMPSON
PETROLEUM SYSTEMS INC
1145 WEST CUSTER PL
DENVER CO 80223

FLORENCE ROTUNDA
ROTUNDAMATICS INC
2132 21ST AVENUE
GREELEY CO 80631

F C ROSS
ARMCO-AUTOMETRICS
4946 NORTH 63RD
BOULDER CO 80301

NAT ROMANIN
ARN-WOOD CO INC
2360 WEST BATES
ENGLEWOOD CO 80110

R H ATKINSON
ATKINSON-NOLAND CO
2619 SPRUCE ST
BOULDER CO 80302

TOM BAKER
BAKER INSTRUMENT CO
328 LINK LANE
FORT COLLINS CO 80524

JOHN BIRMINGHAM
BOULDER SCIENTIFIC CO INC
598 THIRD STREET
MEAD CO 80542

MANFRED WOOG
CAL-AG REFINING
340 SCHOOL STREET
CRAIG CO 81625

DAVID LYNN
CYBER DIAGNOSTICS INC
10691 EAST BETHANY 900
AURORA CO 80014

REX COPPOM
DEV INDUSTRIES
5721 ARAPAHOE AVENUE
BOULDER CO 80303

GEORGE JEFFERS
EITZEN LOUIS C CO INC
0075 COUNTY ROAD 135
GLENWOOD SPRINGS CO 81601

F J LYNCH JR
ELECTROMEDICS INC
109 INVERNESS DRIVE EAST
ENGLEWOOD CO 80112

DON JORGENSON
HORIZON TECHNOLOGY INC
327 LINK LANE
FORT COLLINS CO 80524

MIKE HOWARD
c/o HOWARD MFG CO
5996 SOUTH CROCKER STREET
LITTLETON CO 80120

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F A TYRONE
KILLAM GAS BURNER CO
1240 SOUTH BANNOCK
DENVER CO 80223

JIM PALMER
METRON INSTRUMENTS INC
1051 SOUTH PLATTE RIVER DR
DENVER CO 80223

D J WILSON
PROTEX INDUSTRIES INC
1331 WEST EVANS AVENUE
DENVER CO 80223

R L MATTICS
RCKY MTN SCIENT GLASS BLWG
5620 KENDALL COURT
ARVADA CO 80002

RICHARD MONTEFERRANTE
SARGENT IND-SWEENY DIV
6300 STAPLETON S DR
DENVER CO 80216

NEVIN SCHWIEN
SCHWIEN & SON INC
0293 VENTNOR AVENUE
ASPEN CO 81611

JAMES ZUR
STATITROL DIV/EMERSON ELEC
140 SOUTH UNION BLVD
LAKEWOOD CO 80228

H STUSKA
STUSKA ENGINEERING CO
1900 WEST COLFAX
DENVER CO 80204

WENDELL CROSS
SUN COMPANY INC
5627-H KENDALL COURT
ARVADA CO 80002

FLOYD RIDGEWAY
OOC (ELEC MFG)
PO BOX 308
LAFAYETTE CO 80026

AL DASHER
PARTICLE MEASURING SYSTEMS
1855 COURT S.57
BOULDER CO 80301

PICOSECOND PULSE LABS
3663 HOLLYHOCK LANE
LAFAYETTE CO 80026

WALTER PLYWASKI
PROGMATRONICS INC
2015 TENTH STREET
BOULDER CO 80302

PROTOTYPE SYSTEMS INC
810 SOUTH SHERMAN
LONGMONT CO 80501

PURE CYCLE
1668 VALTEC LANE
BOULDER CO 80306

DAVID DEPENNING
ROCKWELL INTERNATIONAL
PO BOX 464 BLDG 34
GOLDEN CO 80401

FRED VLARRIAL
SIEMENS
800 HOYT STREET
BROOMFIELD CO 80020

MIKE EXNER
SKYLINK CORP
PO BOX E
BOULDER CO 80306

SONTRIX
2300 CENTRAL AVENUE
BOULDER CO 80301

JOANNE ROTH
STAODYNAMICS
1225 FLORIDA AVENUE
LONGMONT CO 80501

JOE RICKE
STORAGE TECH CORP
2270 SOUTH 88TH
MAIL DROP CT
LOUISVILLE CO 80028

S A ELECTRONICS INC
317 DEERTRAIL ROAD
BOULDER CO 80302

TECHNOLOGY CONNECTION INC
3050 WALNUT
BOULDER CO 80301

JIM VIGIL
TECNETICS INC
PO BOX 910
BOULDER CO 80306

MARVIN REMINGTON
THOMPSON RESPIRATOR
1680 RANGE STREET
BOULDER CO 80301

KEN HACKETT
ULTRAK
660 COMTON
BROOMFIELD CO 80020

GERRY PATTON
VALLEYLAB
5920 LONGBOW DRIVE
BOULDER CO 80301

GREG MALANOWSKI
VAC TECH
2590 CENTRAL AVENUE
BOULDER CO 80301

XEDAR CORP
2500 CENTRAL AVENUE
BOULDER CO 80301

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VERN DYKE
KODAK COLORADO DIVISION
SE OF WINDSOR
WINDSOR CO 80551

L R MAXEY
MAXEY MFG CO INC
2101 AIRWAY
FORT COLLINS CO 80524

HERBERT NORMAN
NORMAN CUSTOM CABINETS
622 SHERRY DRIVE
FORT COLLINS CO 80524

ED PHILLIPS
OIL FIELD FABRICATORS INC
PO BOX 979
FORT COLLINS CO 80522

ALLAN C WILSON
PLASTEC PRODUCTS
1418 EAST MAGNOLIA
FORT COLLINS CO 80524

J F WRIGHT
POUDRE PLASTICS INC
1626 RIVERSIDE
FORT COLLINS CO 80524

DAVIS CASHION
RCKY MTN CULTURED MARBLE
105 EAST LINCOLN AVENUE
FORT COLLINS CO 80524

DOUG KIRBY
RCKY MTN FOAM FORM INC
3034 EAST MULBERRY
FORT COLLINS CO 80524

GERTRUDE COLLIER
SEDER PLASTIC CORP
316 LINK LANE
FORT COLLINS CO 80524

WILLIAM G HUSTON
SOLAR ENVIR ENG CO INC
2524 EAST VINE
FORT COLLINS CO 80524

T SWAISGOOD
STORMTRONICS
1032 NORTH RIDGELAWN
FORT COLLINS CO 80521

BLAKE W BERDINE
TECHNICAL MOLDED PROD INC
1402 EAST OLIVE COURT
FORT COLLINS CO 80524

H B DUTRO
TERRAMETRICS INC
16027 WEST FIFTH AVENUE
GOLDEN CO 80401

DOYLE UDY
U D CORP
1898 SOUTH FLATIRON COURT
BOULDER CO 80301

J GILBERT
UNITEC INC
3990 SOUTH WINDERMERE
ENGLEWOOD CO 80110

A R THREADGILL
URINCO
PO BOX 1191
GRAND JUNCTION CO 81502

JOHN FORMAN
VELTEC INC
2321 EAST MULBERRY
FORT COLLINS CO 80524

FRED GIESKING
WHEEL CHECKERS
2020 SOUTH BANNOCK
DENVER CO 80223

DAVE METTER
ADAPTIVE INSTRUMENTS INC
2450 CENTRAL
BOULDER CO 80303

LARRY PATTON
AT&T LONG LINES
1465 WADSWORTH
LAKEWOOD CO 80215

AUTOMATED SYSTEMS INDUSTRIES
810 SOUTH SHERMAN
LONGMONT CO 80501

BIOX TECHNOLOGY INC
4765 WALNUT STREET
BOULDER CO 80306

BOULDER FIRE CONTROL PROD
3154 28TH STREET
BOULDER CO 80301

GARY BLISS
CADNETICS
5797 CENTRAL AVENUE
BOULDER CO 80301

COLORADO ENGINEERING INC
4575 NORTH 11TH STREET
BOULDER CO 80302

MIKE CAHN
COMPUTER WORKS INC
3101 WALNUT
BOULDER CO 80301

CODAR TECHNOLOGY INC
1428 FLORIDA AVENUE
LONGMONT CO 80501

DAVID BRIDGES
ENERGY DYNAMICS INTL
1507 FLORIDA AVENUE
LONGMONT CO 80501

LEE ERB
ERBTEC ENGINEERING INC
5680 VALMONT ROAD
BOULDER CO 80301

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EPX ENGINEERING INC
5680 VALMONT ROAD
BOULDER CO 80301

G T INDUSTRIES
2450 CENTRAL AVENUE
BOULDER CO 80301

SUE BUNTON
HEWLETT PACKARD COMPANY
24 INVERNESS PLACE EAST
ENGLEWOOD CO 80112

H P S CORP
1898 FLATIRON COURT
BOULDER CO 80301

KELLY WELBOURNE
IBIS SYSTEMS INC
6565 ODELL PLACE
BOULDER CO 80303

INSTRUMENT REPAIR LABS
1728 16TH STREET
BOULDER CO 80302

HOLLY RANDELL
INTEGRATED SCIENCES INC
1134 FRANCIS
LONGMONT CO 80501

JAN CAMPBELL
LIFE CARE SERVICES INC
5505 CENTRAL AVENUE
BOULDER CO 80306

JACK BARR/HELEN TUTOR
LIFE IMAGING CORP
2300 CENTRAL AVE SUITE B
BOULDER CO 80301

MICHAEL D AMMON
LINATEL
4665 NAUTILUS COURT
BOULDER CO 80301

WALLY COX
MINISCRIBE
410 SUNSET
LONGMONT CO 80501

JIM ROGERS
NATIONAL CASH REGISTER
2001 DANFIELD COURT
FORT COLLINS CO 8052.

NEOMED
6235 LOOKOUT ROAD
BOULDER CO 80301

RALPH TAVINO
NOVAN ENERGY
1630 63RD STREET
BOULDER CO 80301

JIM KRUG
ONTRONA
4735 WALNUT
BOULDER CO 80301

STANLEY SCHILLINS
VERNS TOP SHOP
1618 SOUTH COLLEGE
FORT COLLINS CO 80525

D & G ENTERPRISES
225 CITY ROAD 21
BERTHOUD CO 80513

MOUNTAIN STATES STANDARDS
219 VERSAW
BERTHOUD CO 80513

WAGON WHEEL PLASTICS
1924 NORTH CITY ROAD 15C
BERTHOUD CO 80513

ALPINE MANUFACTURING
2001 AIRWAY AVENUE
FORT COLLINS CO 80524

ALPINE PLASTICS
1816 HEATH PARKWAY
FORT COLLINS CO 80524

BELT WEIGHING SYSTEMS
1800 NORTH TAFT HILL ROAD
FORT COLLINS CO 80521

BLUEBIRD MANUFACTURING
213 JEFFERSON
FORT COLLINS CO 80524

GIDDINGS MACHINE CO
401 PINE
FORT COLLINS CO 80524

HPE INC
125 SOUTH AIRPARK DRIVE
FORT COLLINS CO 80524

HEATH ENGINEERING
1941 HEATH PARKWAY
FORT COLLINS CO 80524

MAXEY INC
2101 AIRWAY AVENUE
FORT COLLINS CO 80524

MOUNTAIN STATES MACHINE
1800 EAST LINCOLN
FORT COLLINS CO 80524

OIL FIELD FABRICATORS
1721 WILLOX COURT
FORT COLLINS CO 80521

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PLASTEC PRODUCTS INC
1418 EAST MAGNOLIA COURT
FORT COLLINS CO 80521

RICHARDSON TOOL
1604 WEST VINE DRIVE
FORT COLLINS CO 80524

SCHNEIDMILLER INDUS
334 EAST MOUNTAIN AVENUE
FORT COLLINS CO 80524

STORMTRONICS
1032 NORTH RIDGELAWN DR
FORT COLLINS CO 80521

TECHNICAL MOLDED PROD
1402 EAST OLIVE COURT
FORT COLLINS CO 80524

TELEDYNE WATER PIK
1730 EAST PROSPECT
FORT COLLINS CO 80525

WALKER MANUFACTURING
1832 EAST HARMONY ROAD
FORT COLLINS CO 80525

YANT MANUFACTURING
124 RAQUETTE DRIVE
FORT COLLINS CO 80524

EMPIRE INDUSTRIES
2440 NORTH US HIGHWAY 287
LAPORTE CO 80535

PERFECT PATTERN & MOLD RTD
100 WEST CITY ROAD 18
LOVELAND CO 80535

QUALITY MACHINE
893 DES MOINES AVENUE
LOVELAND CO 80535

SUPER VACUUM MFG CO
1303 EAST 11TH
LOVELAND CO 80535

TELEDYNE WATER PIK
609 14TH SW
LOVELAND CO 80535

JIM LEWIS
VALLEYLAB
5920 LONGBORO DRIVE
BOULDER CO 80301

JIM VENTERINE
IBIS CORPORATION
6565 ODELL PLACE
BOULDER CO 80301

DON BOYLE
PRAGMATRONICS
2015 TENTH
BOULDER CO 80301

MARTINDALE MACHINING
BERTHOUD CO 80513

MASTER UNIT DIE PRODUCTS
FORT CULLINS CO 80521

SHIR MEL ENTERPRISES
FORT COLLINS CO 80521

DELEHOY MANUFACTURING
LAPORTE CO 80535

B V CORP
ESTES PARK CO 80517

PETERSON'S SPECIALTY PROD
LOVELAND CO 80537

KEN HACKETT
ULTRAK INC
BOULDER CO 80302

BARBARA CHANDLER
AUTOMATED SYSTEMS
BOULDER CO 80302

BILL HEDRICK
INSTRUMENT REPAIR LABS
BOULDER CO 80302

LOU DROESCH
AMCODYNE
LONGMONT CO 80501

APPENDIX D

Defining High Tech Industries

In order to provide a common standard for high tech industry classifications, a definition supported by Standard Industrial Classification (SIC) codes was selected for this study. SIC codes are industry classifications that are measurable with data from the Economic Censuses as conducted by the U.S. Bureau of Census.*

High technology industries are those sharing the following characteristics:

1. They employ a higher percentage of technicians, engineers, and scientists in their total labor force relative to other manufacturing companies

2. They are characterized by a high ratio of research and development expenditures to sales

3. They produce high value-added products

4. They tend to be highly dependent on access to information and education resources

5. They must use state-of-the-art methods of production to survive

The following SIC codes were used to identify high tech firms used in this study:

Code	Short Title
3573	Electronic Computing Equipment
3612	Transformers
3613	Switchgear/Switchboard Apparatus
3622	Industrial Controls
3629	Electric Industry Apparatus
3643	Current-Carrying Wire Devices
3651	Radio and TV Receiving Sets
3661	Telephone and Telegraph Apparatus
3662	Radio and TV Communication Equipment
3671	Electron Tubes, Receiving Type
3672	Cathode Ray TV Tube
3673	Electron Tubes, Transmitting
3674	Semiconductors and Related Devices
3675	Electronic Capacitors

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*Allen, Gerald L. "Emerging High Tech Companies Based Upon Colorado's High Technology Industry Survey." Business Research Division, University of Colorado, Boulder, Colorado, February 1984.

Code	Short Title
3676	Electronic Resistors
3677	Electronic Coils and Transformers
3678	Electronic Connectors
3679	Electronic Components, NEC
3693	X-Ray Apparatus and Tubes
3694	Engine Electrical Equipment
3699	Electrical Equipment and Supplies
3761	Guided Missiles and Space Vehicles
3764	Space Propulsion Units and Parts
3811	Engineering and Scientific Instruments
3822	Environmental Controls
3823	Process Control Instruments
3824	Fluid Meters and Counting Devices
3825	Instruments to Measure Electricity
3829	Measuring and Controlling Devices, NEC
3842	Surgical and Medical Instruments
3861	Photographic Equipment and Supplies
4811	Telephone Communications
5081	Commercial Machines and Equipment
7379	Computer Related Services, NEC
7391	Research and Development Laboratories

APPENDIX E

Advisory Committee Membership

Mr. Art Bray, Director
Western States Economic Development Institute
Department of Vocational Education
Colorado State University
Fort Collins, CO 80522
491-7512

Mr. Hal Dunning, Director
Aurora Public Schools Technical Center
500 Buckley Road
Aurora, CO 80011
344-4910

Dr. Nancy L. Goodwin, President
Arapahoe Community College
5900 South Santa Fe Drive
Littleton, CO 80120
794-1550

Mr. Allan Hugh
Colorado Association of Commerce/Industry
1390 Logan
Denver, CO 80203
831-7411

Dr. Dale McCall, Executive Director
State Advisory Council for Vocational Education
3645 West 112th Avenue
Westminster, CO 80030
466-8811, ext. 508

Mr. Ivo Roospold Director
Industrial Training
Colorado Division of Commerce and Development
1313 Sherman Street, Room 500
Denver, CO 80203
866-2504

Dr. Tom Sullivan, President
Trinidad State Junior College
Trinidad, CO 81082
846-5541

Mr. Chuck Turman, Manager
Program Services Branch
State Board for Community Colleges and Occupational Education
1313 Sherman Street, 2nd Floor
Denver, CO 80203
866-3063

APPENDIX F

Survey Questionnaire for Colorado Public Two-Year Postsecondary Administrators

Name of Institution _____

Name and Title of Individual Completing Survey _____

1. Please indicate the importance of the following traits in the students leaving your program for jobs in high tech industries (use the following scale).

   3 - Very important
   2 - Important
   1 - Of some importance
   0 - Not important

   ____ a. Possess special technical skills
   ____ b. Possess knowledge in math and science
   ____ c. Possess computer literacy skills
   ____ d. Possess writing and communication skills
   ____ e. Possess good work habits
   ____ f. Possess broad general education
   ____ g. Others (list) _____

2. Have you developed cooperative arrangements with high tech firms (check one)?

   ____ Yes
   ____ No

   If yes, please check those that apply.

   ____ a. Developed courses or programs for specific industries
   ____ b. Developed customized programs for individual firms
   ____ c. Utilized personnel from high tech industries as instructors
   ____ d. Utilized personnel from high tech industries on advisory committees
   ____ e. Utilized personnel from high tech firms as guest lecturers in classes
   ____ f. Utilized equipment donated by high tech firms
   ____ g. Utilized equipment on loan from high tech firms
   ____ h. Utilized high tech firms for internships or other cooperative work experience
   ____ i. Others (list) _____

3. Please rate the items below that may reduce your ability to serve the needs of high tech industries in your area (use the following scale).

   3 - Severe problem
   2 - Somewhat of a problem
   1 - Minor problem
   0 - No problem

   ____ a. Faculty are not willing to maintain competencies or participate in retraining
   ____ b. Lack of resources to start new courses or programs
   ____ c. Lack of resources to secure needed equipment
   ____ d. Unable to hire qualified instructors
   ____ e. Lack of student interest in high tech program areas
   ____ f. High tech industries are not hiring your students
   ____ g. Lack of proper facilities
   ____ h. Difficulty in getting faculty to modify courses or make curriculum changes
   ____ i. Industry does not know what they want or need
   ____ j. Others (list) _____

(PLEASE CONTINUE TO BACK OF THIS PAGE)

4. List those programs in your institution in which a significant number of completers are employed in high tech firms.

_____

_____

_____

_____

Please answer the following questions after reading the attached description of the Colorado Advanced Technology Institutes Role in Colorado.

5. Were you familiar with the Colorado Advanced Technology Institute (CATI) prior to receiving this summary (check one)?

____ Very familiar
____ Somewhat familiar
____ Not familiar

6. Do you feel CATI will benefit your institution (check one)?

____ Great benefit
____ Some benefit
____ No benefit
____ No opinion

7. Please check the roles that you feel CATI should assume (check all those you support).

____ a. Help educational institutions in securing additional money
____ b. Help educational institutions in securing additional equipment
____ c. Help institutions avoid duplication of programs
____ d. Identify new educational programs needed
____ e. Help evaluate present educational programs in the high tech area
____ f. Promote technical level high tech programs
____ g. Promote bachelor's degree level high tech programs
____ h. Promote advanced degree level high tech programs
____ i. Promote research in the high tech area
____ j. Promote inservice training of high tech employees
____ k. Help promote and designate high tech centers at institutions of higher education
____ l. Others (list) _____

_____

_____

8. Who do you feel should be represented in the governing commission of CATI (check one of the patterns listed)?

____ a. High tech industries, public research-oriented institutions
____ b. High tech industries, public research-oriented institutions, public post-secondary institutions preparing technicians
____ c. High tech industries and all postsecondary institutions
____ d. Others (list) _____

_____

_____

9. Do you support the concept of designating certain two-year or four-year institutions as centers of excellence in specific high tech program areas (check one)?

____ Yes
____ No
____ No opinion

Please return the questionnaire in the enclosed stamped envelope by March 20, 1984. Thank you for your cooperation.

APPENDIX G

Survey Questionnaire for Out-of-State Postsecondary Administrators

You have been selected to participate in a survey of institutions located in states having high potential to attract high technology industries. Your candid responses to the following questions will help us determine a better understanding of the challenges faced by educational institutions in meeting the demand of high technology industries. Your responses will not be individually identified for reporting purposes and complete anonymity will be maintained. Your cooperation in completing the questionnaire will be greatly appreciated.

Name of Institution _____

Name and Title of Individual Completing Survey _____

1. Please indicate the importance of the following traits in the students leaving your program for jobs in high tech industries (use the following scale).

   3 - Very important
   2 - Important
   1 - Of some importance
   0 - Not important

   ____ a. Possess special technical skills
   ____ b. Possess knowledge in math and science
   ____ c. Possess computer literacy skills
   ____ d. Possess writing and communication skills
   ____ e. Possess good work habits
   ____ f. Possess broad general education
   ____ g. Others (list) _____

2. Have you developed cooperative arrangements with high tech firms?

   ____ Yes
   ____ No

   If yes, please check those that apply.

   ____ a. Developed courses or programs for specific industries
   ____ b. Developed customized programs for individual firms
   ____ c. Utilized personnel from high tech industries as instructors
   ____ d. Utilized personnel from high tech industries on advisory committees
   ____ e. Utilized personnel from high tech firms as guest lecturers in classes
   ____ f. Utilized equipment donated by high tech firms
   ____ g. Utilized equipment on loan from high tech firms
   ____ h. Utilized high tech firms for internships or other cooperative work experience
   ____ i. Others (list) _____

3. Please rate the items below that may reduce your ability to serve the needs of high tech industries in your area (use the following scale).

3 - Severe problem
2 - Somewhat of a problem
1 - Minor problem
0 - No problem

____ a. Faculty are not willing to maintain competencies or participate in retraining
____ b. Lack of resources to start new courses or programs
____ c. Lack of resources to secure needed equipment
____ d. Unable to hire qualified instructors
____ e. Lack of student interest in high tech program areas
____ f. High tech industries are not hiring your students
____ g. Lack of proper facilities
____ h. Difficulty in getting faculty to modify courses or make curriculum changes
____ i. Industry does not know what they want or need
____ j. Others (list) _____

_____

_____

4. List those programs in your institution that have placed a significant number of students for employment in technical level positions in high tech firms.

_____

_____

_____

Some state legislatures have established "high technology institutes" to coordinate efforts by both industry and educational institutions in meeting the high technology needs of their state. Based upon this statement please answer the following questions.

5. Does your state have a high technology institute (check one)?

____ Yes
____ No

If the answer to question 5 is "Yes", please complete questions 6 and 7. If your answer is "No", please return the questionnaire in the enclosed stamped envelope by March 22, 1984. Thank you.

6. Do you feel your state's high technology institute benefits your institution (check one)?

___ Great benefit
___ Some benefit
___ No benefit
___ No opinion

7. Please check the roles that you feel should be a high priority of your state's high technology institute (check all those you support).

___ a. Help educational institutions in securing additional money
___ b. Help educational institutions in securing additional equipment
___ c. Help institutions avoid duplication of programs
___ d. Identify new educational programs needed
___ e. Help evaluate present educational programs in the high tech area
___ f. Promote technical level high tech programs
___ g. Promote bachelor's degree level high tech programs
___ h. Promote advanced degree level high tech programs
___ i. Promote research in the high tech area
___ j. Promote inservice training of high tech employees
___ k. Help promote and designate high tech centers at institutions of higher education
___ l. Others (list) _____

_____

_____

CHECK THE BOX BELOW IF YOU WOULD LIKE A COPY OF THE STUDY RESULTS.

☐

Please return the questionnaire in the enclosed stamped envelope by March 22, 1984. Thank you for your cooperation.

APPENDIX H

Survey Questionnaire for High Tech Industry Executives

You have been selected to participate in a survey of Selected Colorado Industries. Your candid responses to the following questions will help us determine a better understanding of industry needs. Your responses will not be individually identified and complete anonymity will be maintained. Your cooperation in completing the questionnaire will be greatly appreciated.

Name of Firm _____ Number of Employees in Firm _____

Name and Title of Individual Completing Survey _____

1. Please indicate your need for employees with the following levels of education and training (using the following scale).

3 - Great need
2 - Moderate need
1 - Little need
0 - No need

___ a. Persons with no formal training
___ b. Skilled workers (possess skill but not necessarily postsecondary education)
___ c. Technicians (at least some technical training beyond the high school level)
___ d. Bachelor's degree graduates
___ e. Advanced degree graduates
___ f. Others (list) _____

2. What sources do you utilize in hiring new employees, and how do you rate their training for a position in your firm?

SOURCES (check those sources you have utilized)			LEVEL OF TRAINING (use this scale) 3 - Very well prepared 2 - Well prepared 1 - Somewhat prepared 0 - Not prepared at all
Instate	Out-of-state		
___	___	a. Public vocational-technical schools	a. ___
___	___	b. Community/junior colleges	b. ___
___	___	c. Four-year colleges	c. ___
___	___	d. Universities (with graduate programs)	d. ___
___	___	e. Private vocational schools	e. ___
___	___	f. Military	f. ___
___	___	g. Others (list) _____	g. ___

3. Please indicate the importance of the following traits in the new employees you hire (using the following scale).

3 - Very important
2 - Important
1 - Of some importance
0 - Not important

___ a. Possess special technical skills
___ b. Possess knowledge in math and science
___ c. Possess computer literacy skills
___ d. Possess writing and communication skills
___ e. Possess good work habits
___ f. Possess broad general education
___ g. Others (list) _____

4. Check the sources your firm uses for training or retraining your employees (check all that apply).

___ Company sponsored workshops or classes
___ Company sponsored on-the-job training
___ Classes or workshops in public institutions
___ Classes or workshops in private institutions
___ Classes or workshops provided by governmental agencies
___ Private consulting by individuals or firms
___ Other (list) _____

5. What actions can Colorado's educational institutions take to better serve your firm's needs (please list)? _____

_____

6. Rate the items below that may prevent your firm from seeking cooperation and assistance from Colorado's two-year or four-year educational institutions (using the following scale).

3 - Severe problem
2 - Somewhat of a problem
1 - Minor problem
0 - No problem

___ a. Educational institutions resistance to starting new programs
___ b. Lack of flexibility in providing short term or fast track courses or programs
___ c. Institutions have obsolete equipment and/or facilities
___ d. Lack of qualified/experienced instructors at the institutions
___ e. Too costly to use educational training facilities
___ f. Educational institutions have not communicated to my firm what training programs are available
___ g. Lack of accessibility of institutions in my area
___ h. Do not know what procedures to follow to secure assistance from institutions
___ i. Do not know what programs institutions in my area offer
___ j. Others (list) _____

_____

_____

Please answer the following questions after reading the enclosed description of the Colorado Advanced Technology Institute role in Colorado.

7. Were you familiar with the Colorado Advanced Technology Institute (CATI) prior to receiving this summary (check one)?

___ Very familiar
___ Somewhat familiar
___ Not familiar

8. Do you feel CATI will benefit your firm (check one)?

___ Great benefit
___ Some benefit
___ No benefit
___ No opinion

9. Please check the roles that you feel should be a high priority of CATI (check all those you support).

___ a. Help educational institutions in securing additional money
___ b. Help educational institutions in securing additional equipment
___ c. Help institutions avoid duplication of programs
___ d. Identify new educational programs needed
___ e. Help evaluate present educational programs in the high tech area
___ f. Promote technical level high tech programs
___ g. Promote bachelor's degree level high tech programs
___ h. Promote advanced degree level high tech programs
___ i. Promote research in the high tech area
___ j. Promote inservice training of high tech employees
___ k. Help promote and designate centers of excellence at institutions of higher education
___ l. Others (list) _____

_____

_____

10. Who do you feel should be represented in the governing commission of CATI (check one of the patterns listed)?

___ a. High tech industries, public research-oriented universities
___ b. High tech industries, public research-oriented universities, public two-year post-secondary institutions preparing technicians
___ c. High tech industries and all postsecondary institutions
___ d. Others (list) _____

_____

_____

11. Should certain two-year or four-year academic institutions in the state be designated to specialize in specific high technology fields (check one)?

___ Yes ___ No ___ No opinion

12. Do you consider your firm a "high tech" business or industry (check one)?

___ Yes ___ No

Please return the questionnaire in the enclosed stamped envelope by April 16, 1984. Thank you for your cooperation.

APPENDIX I

Cover Letter for Colorado Public Two-Year Postsecondary Administrators

March 7, 1984

Dear Colorado Postsecondary Administrator:

We are conducting a study funded by the Colorado State Board for Community Colleges and Occupational Education in cooperation with the Colorado Association of Commerce and Industry. The purpose of this study is to help determine the training needs of high tech industries in Colorado and the role two-year, postsecondary institutions should play in serving the needs of these industries. Another objective is to determine educators' and industry executives' perceptions of the role the Colorado Advanced Technology Institute should assume.

Enclosed is a questionnaire that we would like you or someone in a management position in your institution to complete. Please complete the questionnaire and return it in the enclosed, stamped envelope prior to March 20, 1984.

We know you realize the importance this information will have on developing cooperative arrangements between post-secondary institutions and the high tech industries in Colorado. In this respect, it is imperative that we receive a response from each institution.

Sincerely,

B. Harold Anderson, Ph.D.
Project Director

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Enclosures

APPENDIX J

Cover Letter for Out-of-State Postsecondary Administrators

March 9, 1984

Dear Postsecondary Administrator:

Your institution has been identified because of its location in a state having a high potential to attract high technology industries. In that regard, we would like to seek your valuable input in order to determine the perceptions of educational administrators concerning the role two-year, postsecondary institutions should play in meeting the needs of high tech industries.

This study is being conducted in cooperation with our State Board for Community Colleges and Occupational Education and the State Association of Commerce and Industry.

We would like you or someone in a management position in your institution to complete the short questionnaire that is enclosed. The questionnaire can be completed in approximately five minutes. Since we are only sampling selected institutions, it is important that every institution respond. All responses will be kept confidential.

Your cooperation in supporting our research efforts will be greatly appreciated. If you would like a copy of the findings of the study, please check the box at the end of the questionnaire, and we will send you a summary when the study is completed.

Please return the completed questionnaire in the enclosed, stamped envelope prior to March 22, 1984.

Sincerely,

B Harold Anderson

B. Harold Anderson, Ph.D.
Project Director

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Enclosures

APPENDIX K

Cover Letter
for High Tech Industry Executives

March 7, 1984

Dear Industry Executive:

In cooperation with the Colorado Association of Commerce and Industry and the Colorado State Board for Community Colleges and Occupational Education, we are directing a study to help determine the training and employment needs of selected industries in Colorado.

Attached is a questionnaire which we would like you or someone in a management position in your firm to complete; it should only take approximately five minutes. We have enclosed a stamped envelope for your convenience in returning the instrument. Also enclosed is a brief description of the newly created Colorado Advanced Technology Institute, which will assist you in completing the questionnaire.

Participation by your firm is critical since we are only sampling selected Colorado firms. We appreciate your assistance and participation in completing the questionnaire and returning it to us by March 20th. Anonymity of responses will be guaranteed, since the data will be reported in aggregate form.

We feel the data collected by this study will provide important information in designing programs and services for Colorado's high technology related firms, and your cooperation is greatly appreciated.

Sincerely,

B. Harold Anderson

B. Harold Anderson, Ph.D.
Project Director

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Enclosures

APPENDIX L

CATI Description

The Colorado Advanced Technology Institute (CATI) was established by Senate Bill No. 1 in 1983. The institute is charged with the following objectives:

1. Promote, support, and enhance education and research programs in fields of advanced technology

2. Improve quality/quantity of baccalaureate graduates from Colorado institutions in fields of advanced technology

3. Further research capabilities of Colorado institutions of higher learning and to attract and retain superior faculty at such institutions

4. Enhance the economic health of Colorado by encouraging investment by both government and private sources

CATI is under the Department of Higher Education and governed by an eleven-member commission called the Colorado Advanced Technology Commission. The governor of Colorado appoints six members to the commission from the business sector and one member from the University of Denver. One representative each is selected from the University of Colorado, the State Board of Agriculture, the Colorado School of Mines, and one from the Commission on Higher Education. The commission has the following duties:

1. Assess long-range goals of higher education regarding advanced technology

2. Analyze the impact that CATI will have on the economy

3. Establish priorities in distributing money/equipment to higher education institutions

4. Develop a system to determine advanced technology industry needs and design a peer review process among higher education institutions

5. Review how money, gifts, and equipment were used by institutions of higher learning and avoid duplication of programs

6. Establish centers of excellence for specialties at selected higher education institutions

7. Consider industry needs for baccalaureate/graduate level training and to assess the needs for inservice/continuing education at the post-baccalaureate level

8. Determine the equipment needed to develop the electronic engineering phase of the institute